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Revised CICS bows

Version called 'response' to user needs, frees up usable virtual storage space

By John Gallant
CW Staff

"Long overdue but well worth the wait." That was the consensus last week of users reacting to IBM's introduction of an enhancement of its Customer Information Control System.

The product, officially known as CICS Version 1, Release 7, promises to ease the installation and reconfiguration of terminals, offers the potential to free much-needed virtual storage space, boasts improved recovery and restart capabilities and provides additional command-level functions and device support.

IBM's low-key unveiling of the latest version of its CICS transaction manager — the basis for on-line applications in most IBM mainframe environments — was met with praise from both users and analysts (see story page 8). Representatives of both groups contended that the enhancements improve the product's usefulness in supporting large networks. In an apparent effort to show concern for user needs, IBM stated that CICS was revamped in response to more than 55 requirements submitted by the Guide and Share IBM users groups (see story page 8).

"There is a great deal to be excited about in this announcement," said William Ray, manager of data and network services for Corning Glass Works, Inc. in Corning, N.Y. "CICS is now a very healthy product with a great many things that will be of value to us."

According to Frank Gens, industry analyst with International Data Corp., a Framingham, Mass.-based market research firm,

See CICS page 8

DEC profit decline less than expected

By Peter Bartalik
CW Staff

Absorbing some impact from the general decline in minicomputer sales, Digital Equipment Corp. last week reported fourth-quarter profits below its year-earlier level but higher than Wall Street analysts had projected. Of the other major minicomputer manufacturers, both Wang Laboratories, Inc. and Data General Corp. recently reported quarterly losses, while Prime Computer, Inc. reported a slight increase in profits.

In other financial news last week, Control Data Corp. said Securities and Exchange Commission objections to the company's reporting procedures caused CDC to revise its recent second-quarter report to show a loss and to revise 1984 results by cutting reported profits by 84%. Also, Cullinet Software, Inc. said it expects first-quarter profits to dip for the first time in 29 reporting periods.

Maynard, Mass.-based DEC said demand for its VAX 8600 and Microvax II products remained high. A DEC spokesman told *Computerworld* that a new, tough budget will enable the company to weather current economic conditions and to ride out DEC's first-ever fourth-quarter-to-first-quarter revenue decline.

DEC said profits for the fourth quarter were $100.4 million, or $1.66 per share, down 23% from $130.6 million, or $2.28 per share, from the same quarter a year earlier. In recent weeks, securities analysts projected that DEC's profits would range downward from about $1.40 per share.

Revenue for the quarter was $1.85 billion, up 12% compared

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■

High marks for new Symphony

By Eric Bender
CW Staff

Initial reactions to Lotus Development Corp.'s first upgrade of its successful high-end Symphony productivity program were favorable, according to a *Computerworld* survey conducted last week of corporate beta users. "Overall, I felt very positive about the product," said Gary Schnorr, manager of office information systems at General Foods Corp., which has installed approximately 1,200 personal computers.

Schnorr emphasized the importance of the release's expanded memory capability. Working in conjunction with a new generation of memory boards — such as Intel Corp.'s Aboveboard — this capability allows users to address up to 4M bytes of dynamic random-access memory above the usual 640K-byte barrier. "To really unleash the power of Symphony," Schnorr said, "you're going to need the expanded memory." The original version of Symphony, shipped in July 1984, fit within the standard Microsoft Corp. MS-DOS memory limitation.

"Expanded memory is not something

See SYMPHONY page 8

Net gain: Firm finds multimillion dollar solution

By Paul Korzeniowski
CW Staff

ST. LOUIS — Key data processing personnel at McDonnell Douglas Corp. looked into a crystal ball in 1981 to see what the company's future networking needs would be. It was not a pretty sight.

Costs of managing its network were rising by 20% per year. Technical advances were constantly rendering current systems obsolete. Business requirements were shifting and placing additional demands on the network. Divestiture was lurking on the horizon, and the company feared it would lose the support and services that AT&T had been supplying.

In a manner that would have made John Wayne proud, the company decided to take matters into its own hands by designing and implementing what may be the largest private network in the country.

Once the company decided to build its own network, requests for proposals were sent to 30 vendors, according to Ernie H. Ridenhour, staff vice-president for information resource management at McDonnell Douglas and the one responsible for setting its telecommunications policies. The firm established a project team from various departments. The team was headed by D.C. Augustin, director of telecommunications network services at the firm.

Augustin's team considered various proposals before choosing Contel Information Systems, Inc. to handle the implementation of the network. The Contel installation at McDonnell Douglas cost $68 million and now supports 54,000 employees in 222 buildings.

Before the Contel network was installed, McDonnell Douglas' main offices here and in Long Beach, Calif., were connected by a Western Union, Inc. satellite link, 17 voice lines and 13 data lines. Regional offices were supported by these hubs with dial-up and private leased lines. All the offices used Centrex facili-

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NEWSPAPER

Insurer installs AT&T wiring

By John Blc
CW Staff

BOSTON — The nation's sixth largest insurance company here is installing a building wiring system from AT&T to support IBM terminals but will keep that cable separate from wire used to support telecommunications.

After looking at IBM's Cabling System, John Hancock Mutual Life Insurance Co. decided to install AT&T's Premises Distribution System (PDS). Like the IBM product, the AT&T cable scheme details how and with what a building can be wired to provide outlets for terminals that are similar to common electrical sockets. This obviates the need to pull new wire each time a terminal is relocated.

Hancock is installing the AT&T system in its Clarendon building, a 60-year-old, eight-floor structure that is being refurbished into modern office space in a $35 million renovation project. The building had been used for storage since the neighboring 60-story Hancock Tower was added to the company's three-building complex in Boston's Back Bay area.

> ”
> *The AT&T cable scheme details how and with what a building can be wired to provide outlets for terminals. This obviates the need to pull new wire each time a terminal is relocated.*

When renovations are completed later this year or early next year, the Clarendon building will be used by Hancock and some of its subsidiaries, according to Michael Miele, a consultant for facilities planning. The AT&T system will primarily be used to support TSO programmers using IBM 3178, 3179, 3278 or 3279 display stations, Miele said.

The IBM terminals, which have standard plug-and-twist coaxial cable connectors, will be adapted to the four-pair strand wire used in the AT&T PDS system through baluns. Balun is a contraction taken from balanced/unbalanced and refers to the difference in electrical impedance between twisted-pair wire and coaxial cable, according to AT&T.

The flat, four-pair wire will run under the carpet from each office in the Clarendon building through a nearby column and up into the ceiling. Wire groups from the columns will then be gathered at wire closets on each floor. The wire closets house patch panels that enable office outlets to be cross-connected to achieve desired configurations.

The closets on each floor also terminate AT&T fiber-optic cables that run down through the building's vertical risers into Hancock's Berkeley building next door, Miele said. Hancock has moved all of its terminal controllers back into the Berkeley building, which houses the firm's processing facilities. Each of the roughly 25 IBM 3274-type controllers — now locally attached — can support up to 32 remote terminals through a pair of fiber-optic cables. The fiber-optic pairs are outfitted with multiplexers from Fibronics International, Inc.

Miele said that locally attaching the controllers improves terminal response time and facilitates cable coordination. Use of the fiber-optic pairs enables the terminals to be located at such distances from the controllers, but the copper-pair wire running from the fiber termination point in the wiring closet to the workstation cannot exceed 400 feet, Miele said.

Hancock chose to wire the PDS system separately from the wire harness used with its AT&T System 85 private branch exchange. "We were worried that we might experience things like cross talk if we put telephone traffic on the same cable with data running at 2.3M bit/sec.," Miele said.

Asked if AT&T had tried to convince Hancock to support the terminals with the System 85, Miele said he believed the heavy TSO traffic would bog down the PBX. "We're still looking for a local-area network, but today local nets are not ready for the Hancock environment; we're strictly [IBM Systems Network Architecture/Synchronous Data Link Control]."

Miele estimated that the AT&T system costs roughly $300 per outlet to install.

Last year Hancock relocated roughly 60% of its employees. Generally, each time a person with a terminal was moved, the workstation had to be rewired. With PDS, Miele expects to save about $200 per move or installation.

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CORRECTIONS

A chart reporting recent layoffs in the computer industry incorrectly listed the number of employees laid off at Honeywell, Inc.'s Small Computer and Office Systems Group [CW, June 24]. There were 120 workers dismissed. Also, the name of Honeywell's Synertek division was misspelled.

An item in the *Softscope* column of June 24 incorrectly depicted the relationship between Digital Equipment Corp. and Cincom Systems, Inc. Although DEC will market and promote Cincom software as a result of a joint agreement, Cincom will continue to supply the products.

In the chart "Users rate their minis" [CW, July 22], the column representing IBM's System/38 was mislabeled System/36.

Contrary to information published in the "Random Access" column [CW, Aug. 5], Digital Equipment Corp.'s External Document Exchange software enables machines ranging from the DEC VAX-11/725 to the VAX 8600 to exchange read-only and revisable form documents with IBM Distributed Office Support Systems hosts.

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DBMS helps foundation handle 'information overload'

By Charles Babcock
CW New York Bureau

NEW YORK — The Exxon Education Foundation has tested Team-Up, a data base management system, on its local-area network for six months, and the results indicate it will be able to handle what had been "a massive information overload."

So reported Richard R. Johnson, the foundation's research director. The foundation has spent two years looking for a data base management system; hampered by a paucity of local-area network products. Major software houses are beginning to bring network systems to market but "at the beginning of 1984, there was virtually nothing," said Joel Levy of Wohl Associates of Bala Cynwyd, Pa.

By mid-1984, foundation staff members had tried two systems, Datastore from Software Connections, Inc. in San Jose, Calif., and Team-Up, previously Informa DBMS, from Unlimited Processing in Jacksonville, Fla.

Random changes not accepted

The early version of Datastore had a glitch in a conversion routine that "caused 1983 to become 1984" when the foundation transferred its records from a minicomputer to its Ungermann-Bass, Inc. local-area network. Datastore was user-friendly and performed well as a DBMS, but "we will not accept random changes in our data," Johnson said.

The version of Informa that preceded Team-Up also had its drawbacks. It was limited to 8M bytes of file memory, and the foundation, with "thousands of documents coming and going day to day," quickly filled it up, Johnson said.

Prior to its attempts to use Datastore and Informa, the foundation had installed a Datapoint Corp. Attached Resource Computer network, but found it could not be linked to its Exxon office equipment. The Datapoint minicomputer had to be custom programmed for each application, and an attempt to implement a business-letter-writing program cost $20,000. "Every time we turned around to do something, the software costs would eat us alive," Johnson noted.

Another major concern was knowing where the foundation stood relative to its budget. "We were months behind with the Datapoint system," the research director said.

So in early 1985, the foundation installed the Team-Up package, the version of Informa that included an application and report generator.

Team-Up "was much more powerful. Suddenly we had a management tool that would keep us up-to-date," Johnson said.

The foundation, with a staff of 11, is Exxon's nonprofit agency for making charitable grants to educational projects. Representatives of educational institutions passing by Exxon's World Headquarters in New York stop in to chat about funds, and 6,000 to 8,000 formal applications are kept on hand, Johnson said. It must maintain files on 2,000 active grants. In 1985, the foundation will give away $32 million, Johnson said.

> *'Every time we turned around to do something, the software costs [of the Datapoint mini] would eat us alive.'*
>
> — Richard R. Johnson
> The Exxon Education Foundation

Because its work lies outside the main business of Exxon, the foundation enjoys more autonomy than many other offices. Although it had to get permission to hire outside consultants for its local-area network, the foundation did not have to go through central purchasing to get its 11 IBM Personal Computers and Personal Computer XTs, Johnson recounted, and this helped it set up its network quickly.

The foundation located the Team-Up package through its consultants, the Institute of Public Services Performance, Inc., a small New York firm that specializes in helping nonprofit agencies with microcomputers.

Suggestions added to beta version

The foundation is beta testing Team-Up, and part of the package's acceptance stems from the fact that the foundation also served as an alpha test site for an earlier version known as Informa. The foundation staff suggested improvements to the product that found their way into the beta version — such as expanding the memory limit for files, according to Johnson.

The system offers the advantages of a true relational data base management system in that updating data for one application updates it for all applications, Johnson said. In addition, multiple indexes may be used, which aid in the search for particular grants.

Additional records may be added to existing files through the Extend utility. Nonrelational systems require precise record definition upon creation of a file and cannot be altered afterward, he said.

In a similar vein, additional records in a Team-Up file may be indexed after the initial index definition through the Reindex utility.

The foundation is developing a program that will, when one set of data is updated, automatically update related data, such as budget or payment totals. It will run as a Personal Computer batch program on the network. Automatic budget updating "solves one of the major problems of managing a foundation," Johnson said.

The foundation staff frequently receives calls for information about the status of grants. Under Team-Up, they can call up a Review program that presents the evaluation of an application, while a control C command fills four additional screens of information. Johnson said the related information, such as how much money has been paid out or when a report is due from the recipient, is available but will not be stored in the Review program when the user is done. "This is critical for managers," who can usually retrieve all the information they need in "the time it takes to transfer a telephone call to them," Johnson said.

File protection feature

On any network, the ability to prevent disruption of files because of multiple contention is important, and Team-Up offers file protection. If Johnson is viewing a file and someone else changes it, he is both notified that a change has occurred and informed what the change is. In other systems, the second user would often be notified that a change had occurred and, at that point, be frozen out, said Stanley Altman, one of the institute's consultants. With Team-Up, the second user can reenter a change to the same record without going out of the program.

Team-Up, with a stated capacity of 32,000 applications with 700,000 files, is large enough for the foundation's purposes, Johnson said. It can access any record in a 36,000-record file in 1.1 seconds, Unlimited Processing spokesmen said.

Several levels of security control the access of each user to applications or files. When a user deletes a file, for example, it is stored in a manager's area for review, because a manager must make the final decision to delete, Johnson said.

Johnson cites one drawback to the system. It relies on a Davong Systems, Inc. hard disk for central storage, and that company is in reorganization proceedings of Chapter 11 under the Federal Bankruptcy Act. Ungermann-Bass has announced it will stop supporting the Davong hard disk at the end of the year, and Johnson said his office will have to buy the recommended replacement.

Buyers have few choices in local-net DBMS market

NEW YORK — Unlimited Processing, Inc., which started shipping its Team-Up data base management system to customers in July, is a 4-year-old, 22-employee company in Jacksonville, Fla., founded to produce multiuser software.

Its first network data base system, Informa, went through three versions before coming out as Team-Up Version 1.1. Team-Up has about 100 users, many of them beta test sites, Unlimited Processing spokesmen said.

Team-Up runs on 13 local-area networks, including 3Com Corp.'s Ethernetseries; Corvus Systems, Inc.'s Omninet; IBM's PC Network; Novell, Inc.'s Netware; Microsoft Corp.'s Networks; Digital Research, Inc.'s Concurrent DOS; and Ungermann-Bass, Inc.'s Network One.

"There are very few products on the market. No standards have been set, and the whole networking software [technology] is in its infancy," noted Melody M. Johnson, who follows office systems for the Seattle investment bank, Cable, Howse & Ragan.

Competing products at this point include Dataflex from Data Access Systems, Inc. in Miami, Fla.; Knowledgeman from Micro Data Base Systems, Inc. in Lafayette, Ind.; Metafile from Sensor-Based Systems in Glenview, Ill.; and Datastore from Software Connections, Inc. in San Jose, Calif.

The Exxon Foundation tried Software Connections' Datastore but discovered "random changes in our data" while transferring records. Attempts to clear up the problem with the vendor met with disbelief and unreturned phone calls, said Richard R. Johnson, research director.

Software Connections' Product Marketing Manager Gary Kwok acknowledged that a glitch occurred in a conversion routine of the first version of Datastore, a problem that has since been cleared up. He added that the problem occurred before Software Connections established its technical support unit and Exxon's complaint "fell through the cracks. Now it's come back to haunt us," he said.

— Charles Babcock

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NEWS

Justice probes allegation that Hitachi dumped chips

By Mason McKinney
CW Staff

SANTA CLARA, Calif. — Cries from the semiconductor industry charging unfair trade practices on the part of Japanese chip manufacturers are beginning to fall upon receptive ears.

The U.S. Department of Justice has launched an investigation into accusations that Hitachi Ltd. is illegally dumping semiconductor chips into the U.S market by cutting prices below production costs.

News of the investigation was made public here by U.S. Sen. Pete Wilson (R-Calif.) at a hearing by a subcommittee of the Congressional Joint Economic Committee held to investigate trade practices of Japanese chip makers.

Wilson had requested such an investigation following disclosure of an alleged Hitachi memo that instructed distributors of its erasable programmable read-only memory (Eprom) chips to undercut by 10% Eprom chip prices quoted by Hitachi's U.S. competitors [CW, June 17].

Hitachi's Hiroshi Miyamoto, based in Washington, D.C., told *Computerworld*, "We are cooperating with the Justice Department in its investigation, and we are confident that when the investigation is completed the allegation of predatory pricing will be shown to be totally unfounded."

Series of positive signals

The Justice Department investigation is one of a series of positive signals recently sent by the Reagan administration to the ailing semiconductor industry, currently in the midst of the most serious economic downturn in its history. In other recent moves, the U.S. International Trade Commission ruled in favor of Micron Technology, Inc.'s dumping claims against seven Japanese chip makers. That case is now before the U.S. Department of Commerce and could result in import duties for Japanese semiconductor firms.

Last week's hearing of the Joint Economic Committee's Subcommittee on Trade, Prodoctivity and Economic Growth was prompted by a petition from the Semiconductor Industry Association (SIA) asking that the U.S. government demand increased Japanese purchase of American semiconductor chips. According to Daryl Hatano, SIA manager of government affairs, Section 301 of the 1974 Trade Act allows the president to take such actions against countries believed to be pursuing discriminatory trade practices.

Hitachi representatives did not attend the opening subcommittee hearing but will testify in later subcommittee hearings, Wilson said. The company recently responded to U.S. manufacturers' charges of unfair trade practices by announcing it will increase its U.S. chip purchases by $120 million by the end of next year.

In his testimony before the congressional panel, Charles Sprock, president of National Semiconductor Corp., called the Hitachi purchasing announcement a grandstand play. "We must insist upon fair trade before permanent damage is done to the industrial base," he said.

'Equal access to every market'

George Scalise, senior vice-president at Advanced Micro Devices, Inc. (AMD), underscored the SIA stance. "We have to have equal access to every market," said Scalise, who indicated that AMD has been seriously affected by the Japanese 10% undercut of the 64K-byte Eprom market.

To correct the imbalance, Scalise proposed that the U.S. should launch an affirmative action program to freeze Japan's U.S. market share until there is parity in penetration.

Past efforts by U.S. manufacturers to increase their share of the Japanese market have failed, Scalise said, and the U.S. semiconductor industry continues to hold a 10% market share in Japan, compared with a 55% market share throughout the world.

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I'm going to promote through the company, but it can really come in handy," according to Robert Martin, manager of decision support systems at Cleveland's Eaton Corp. Martin, whose group supports more than 400 micros, said that expanded memory "bailed us out of several applications in sorting a large data base where the program runs up against a memory barrier." He said he found no bugs in running Symphony 1.1 with Intel's Aboveboard.

Eric Haskell, vice-president for finance at Transamerica Delaval, Inc. in Lawrenceville, N.J., which has approximately 225 personal computers, mentioned the expanded memory capability favorably. However, Haskell said, he doubts his firm will take advantage of the feature for more than 10% to 15% of its machines.

More important, Haskell said, is the Symphony 1.1 spreadsheet's revamped memory allocation scheme, and he found that his beta copy did use RAM more efficiently.

Users commented favorably on other enhancements of the Symphony program. These include coprocessor support, Macro Library Manager, upgraded command language and spreadsheet compatibility with a scheduled upgrade of Lotus' 1-2-3 program.

In regard to coprocessor support, users noted the potential for the Intel 8087 and 80287 numeric coprocessors to boost performance significantly. "I've done a good bit of testing with it, and we're very pleased," Martin said.

The release's speed is close to the original version's, he noted. "We've perceived and measured some time improvements. There are instances where it runs slowly, but those are few and far between. If there's much crunching going on, there's no question it's running faster."

Symphony 1.1's Macro Library Manager, commonly called "Hyperspace," permits users to store macros, numbers, labels and named ranges outside the work sheet. Although it is not for every Symphony user, Hyperspace is a helpful feature, users said.

"Very sophisticated things can be done" with the enhanced Symphony Command Language, Schnorr said. His group intends to use Symphony as a development tool for front-ending host applications, helping to establish consistent user interfaces.

Symphony 1.1 will offer spreadsheet compatibility with the upcoming release of 1-2-3, according to Lotus. With many users sticking with 1-2-3, "that will be a very important feature for us," Martin said.

Relatively few complaints surfaced, but one that was mentioned was the product's inability to fit the new Symphony on a diskette with IBM PC-DOS.

Another was the continued requirement for a key disk on hard disk drive systems, which Martin described as a minor annoyance. Lotus is not the only vendor with that requirement, "and that's the only reason it's a minor annoyance," he said, adding that Lotus soon may be the only one.

Priced at $695, Symphony 1.1 runs on the IBM Personal Computer and compatibles and includes spreadsheet, word processing, data base management, graphics and communications functions. An upgrade from Symphony 1 costs $75.

Symphony made simpler

Reviews of the original Lotus Development Corp. Symphony software described the package as hard to install, learn and use. Although Lotus downplays those criticisms, the firm said that its latest release of the integrated package, Symphony 1.1, addresses them all.

The complicated installation procedure has been cleaned up considerably, early users agreed. "Just about the time I memorized the old one, they improved it," according to Robert Martin, manager of decision support systems at Cleveland-based Eaton Corp. (see story page 1).

Most early users spent little time with the revamped documentation and tutorial, so they gave no solid evidence on how effective those upgrades have been. However, some emphasized that Symphony may have been given a bad rap on ease-of-learning and ease-of-use issues, which are inextricably linked to the package's ambitious scope.

"I was one of those saying, 'There's too much to learn,'" Martin said. "I think I fell into the trap of comparing it to [Lotus'] 1-2-3. We discouraged 1-2-3 classes around here; you could learn it a lot better under pressure.

"Since then I've turned around; I no longer call it a criticism," he said. "When you have a big job to do, you want to make it easy to do, but it's still a big job. I'm willing to accept the fact that the learning curve will be slow."

General Foods Corp.'s manager of office information systems, Gary Schnorr, also said he felt that it is an unfair criticism. "People were trying to learn five applications at the same time," he said. "If you take it in a logical procession, it's as easy as any package."

"A lot of people have gotten over the difficulties," said Dan Spiner, president of Management Information Software, a New York reseller. Symphony is "really serious" software, Spiner emphasized.

Symphony users also stood up for the concept of the all-in-one application package. "In my mind, there's a common misconception that integrated software is failing and that the only answer is integrating, windowing software," said Eric Haskell, vice-president for finance at Lawrenceville, N.J.-based Transamerica Delaval, Inc.

However, he maintained, "a lot of the euphoria of the early [personal computer] influx is over," and users would rather learn one package than play with several. "Integrated software solves that [problem] better than windowing software."

— Eric Bender

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FINANCES from page 1

with $1.65 billion a year earlier. Equipment sales increased only 7%, however, while revenue from service and other sources generated more than half of the total increase.

Although this was the second consecutive quarter in which DEC profits declined in comparison with the respective year-earlier periods, the fiscal year was closed out with a 20% increase in revenue to $6.68 billion from $5.56 billion the previous year. Profits for the year were $446.7 million, or $7.42 per share, up from $328.8 million, or $5.73 per share.

In a prepared statement, DEC President Kenneth H. Olsen said the company kept inventories below the year-earlier level and ended the year with cash reserves in excess of $1 billion.

Foreign sales remained strong

He also said foreign sales remained strong, but some U.S. customers were postponing purchases. A spokesman later said that domestic sales in the quarter were flat or down slightly from the year-earlier quarter.

Some analysts have expressed concern that the company's unofficial no-layoff policy could squeeze profit margins during the next few months as economic pressures and seasonal adjustments impact the company.

But Mark A. Steinkrauss, director of investor relations with DEC, said the company believes it has implemented a correct business plan. "We understand the concerns, and from many perspectives, it could be a tough quarter, but we feel pretty confident about it," he said.

"We have implemented a tough new budget that is very conservative in terms of growth," Steinkrauss said. The company reduced its manufacturing work force through attrition during the year, but that has been offset by an increase in the number of sales employees.

Steinkrauss said the company has trimmed delivery dates on its VAX 8600 model to three to four months from original estimates of four to five months. He also disputed contentions that demand is less than the company had anticipated. He said fourth-quarter shipments more than doubled from the 140 units shipped in the third quarter.

While the performance level of the Microvax II has led to concern about sales of mid-range products, Steinkrauss said that sales of the VAX-11/750 and VAX-11/860 have held up well in comparison with previous years. "Below the [VAX-11/750] level, sales will probably tend to decline," he said.

Second consecutive losing period

In Minneapolis, CDC spokesmen said objections by the SEC staff compelled the company to reduce fourth-quarter 1984 earnings by $26.5 million, resulting in profits for the year of $5.1 million, or 12 cents per share. The recently reported second-quarter profits of $3.8 million [CW, July 22], or 10 cents per share, was revised to produce a loss of $4.8 million, or 12 cents per share, marking the second consecutive losing period for the company.

CDC said the SEC staff objected to the recording of tax benefits related to discontinuance of its plug-compatible disk drive business and to the method of reporting losses from Earth Energy Systems, Inc., in which CDC owns a majority interest.

Also, CDC said a financial subsidiary posted a second-quarter loss that had not been reflected in the July report.

In Westwood, Mass., Cullinet said it expects to report later this month a $4 million profit for the first quarter, down from $5.5 million a year earlier, and a revenue increase of only 4% to 5% from the year-earlier period. The reversal from several years of 50% sequential quarterly increases in profits and revenue was attributed to delayed orders resulting from current economic conditions.

But John J. Cullinane, chairman and founder of the software firm, said he remains optimistic about future results.

CATV data service OKed

WASHINGTON, D.C. — The Federal Communications Commission opened the door last week to allowing CATV firms to provide interstate data transmission services.

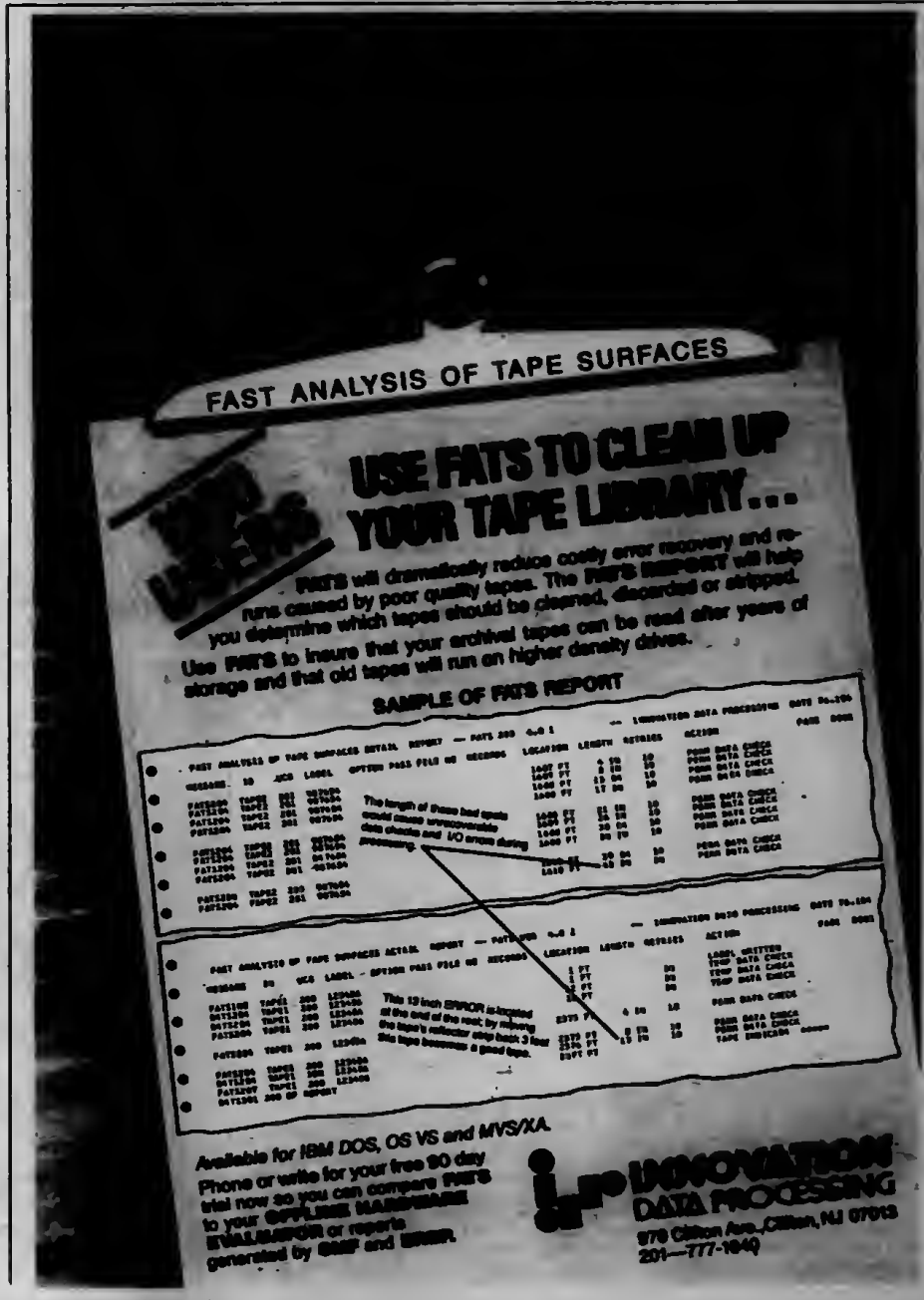
The FCC ruled that states may not impose any regulation that would block CATV companies from offering voice/data transmission services over interstate facilities because doing so would inhibit interstate competition.

The declaratory ruling was prompted by the case of Commline, Inc. of Omaha, a subsidiary of Cox Cable Communications, Inc. that provides dedicated, high-speed digital transmission service — including interconnections with MCI Communications Corp.'s interstate networks — to business and institutional customers in Omaha.

In April 1983, the Nebraska Public Service Commission ordered Cox to drop the service.

The FCC justified its preemption of Nebraska state authority on the grounds that Commline's service includes interstate as well as intrastate traffic, officials said.

FCC officials said the precedent-setting Cox decision will be applied on a case-by-case basis in all states to tear down state regulatory barriers that currently prevent CATV firms from entering interstate transmission markets.



CICS from page 1

Version 1, Release 7 addresses some major deficiencies that have plagued CICS since its inception in 1973. "What this does is resolve a primary drawback of CICS, the requirement to bring the system down to define or reconfigure resources," Gens said.

Gens was referring to the extension within the release of the Resource Definition On-line (RDO) facility.

Ability to define device dynamically

This enhancement allows a user to define a new device dynamically, such as an IBM Vtam-attached terminal, while CICS is running. An IBM spokesman said the enhancement eliminates the requirement to reassemble the CICS terminal control table.

The previous release of CICS gave users the ability to define programs, files and transactions dynamically.

Users interviewed by *Computerworld* said most large data centers typically compile a backlog of terminal changes and routinely schedule CICS outages of two hours or more to reassemble and install terminal control tables. The RDO extensions will allow systems programmers to add terminals in a matter of moments whenever necessary, giving users more flexibility in reconfiguring their resources.

In addition, CICS now provides an automatic installation capability that spares users from defining a terminal to CICS if it has been previously defined to Vtam.

The spokesman said the alternative to explicit definition of a terminal reduces the need for definitions, the storage they consume and the effort required to manage them. Terminals can also be defined so that their definitions are shipped automatically to a CICS system, making a single definition of a terminal in a CICS network sufficient.

Users said the amount of virtual storage freed by the automatic installation facility and other CICS enhancements would vary from shop to shop but could range from a 1M-byte savings to as much as 4M bytes.

"The most important change is in the implementation of the terminal control table," said Harvey Kramer, senior information systems consultant with Southern California Edison Co. in Rosemead, Calif.

"By not having to predefine terminals we may get up to a three to four megabyte buy-back in virtual storage," Kramer said.

CICS users also cited potential time savings from enhancements to the recovery and restart facilities of CICS.

Emergency and so-called warm restarts are improved because the opening of Vsam and Bdam data sets is deferred until the data sets are referred to by a specific application.

Also, Vsam and Bdam files can be allocated while CICS is running rather than during job-step initialization.

Reduced need for reinitialization

"If you have a failure in your system, you can restart more quickly because IBM has reduced the number of systems and files that have to be reinitialized," Gens said.

"You can initialize those data sets and applications as they are required rather than right at the beginning," Gens explained.

The enhanced release of CICS also features added command-level programming facilities that provide an interface to the system spool files maintained by IBM's JES2 and JES3.

The facilities allow applications to write and retrieve records directly to the JES spool.

Users said that this improvement will give programmers the capability to address a new class of applications that draw information from batch systems.

CICS upgrade addresses long-overdue requirements

By John Gallant
CW Staff

The fortified release of CICS does not represent a bold technological foray on IBM's part, users and analysts told *Computerworld* last week. But the product's enhancements meet some very real needs — needs some observers said have gone unaddressed for too long.

"This is clearly one of the most important software announcements in recent memory," said William Ray, manager of data and network services with Corning Glass Works, Inc., in Corning, N.Y. The company supports more than 1,500 terminals under CICS on an IBM 3081K processor. "Adding new devices or reconfiguring terminals is a big task for us. We spend a lot of time changing [terminal control] tables. I would like to have seen these changes sooner."

Both Ray and Donald Langston, associate director of Schering-Plough, Inc.'s Memphis data center and corporate computer operations, lauded CICS's new support for on-line definition of terminals. Schering-Plough supports about 1,000 terminals through CICS on a 3084 mainframe under MVS/XA. The company routinely scheduled CICS downtime of two hours or more to reconfigure its network.

"This release has addressed a key issue in continuous operation of data centers," Langston said. "It gives you an opportunity to reduce the number of scheduled CICS outages. We typically wait until we have a number of terminals to add and schedule CICS downtime. That impacts planning and application implementation schedules, which have to be geared to the outage."

But, Langston added, "These requirements have been outstanding for years. The desire by users not to have to take CICS down to make changes has existed since CICS came out."

Growing importance of CICS

John King, executive director of the San Jose, Calif.-based James Martin Associates consulting firm said the announcement marks an acknowledgment by IBM of the growing importance of CICS — one of its most widely installed mainframe software products.

"The most important aspect of this [announcement] is that IBM has recognized the strategic importance of CICS and has brought it into the real world of large networks," King said. "IBM appears to be slowly moving to a point where a systems programmer can have a single view of the entire network, where users can reconfigure and expand a network without huge numbers of people."

King's comments were echoed by Frank Gens, industry analyst with International Data Corp., a Framingham, Mass.-based market research firm. "The release addresses old criticisms of IBM's communications products. It was said that if IBM ran the telephone company it would have to shut the whole system down to add a phone. This is just another situation where IBM is struggling to catch up with a product that has had some major deficiencies. It is not a bold new step or a new direction. But it does make a cornerstone product more usable and functional."

Users agreed that the largest sites — those that face time-consuming network reconfigurations — will benefit most from Version 1, Release 7 of CICS. But, said Christopher Gruchawka, senior technical manager with the Bogota, N.J.-based CICS consulting and education firm Interactive Solutions, Inc., end users will benefit along with DP professionals.

'Attack a new class of applications'

"This is not only significant to systems programmers and network managers," he said. "It is important to users because it will reduce the backlog and waiting involved in restructuring a terminal environment. It will also allow developers to attack a new class of applications that access information in the JES2 and JES3 batch spools."

Observers also emphasized the importance of the enhanced version as a base for future software enhancements. "The release is vital in that it lets users keep their terminal control tables smaller and save on virtual storage," Gens said.

"That is a big issue for CICS users who are in a bit of a squeeze waiting for IBM to announce an [Extended Architecture] version of CICS. This gives them a little bit of relief until then."

IBM 'sensitive' to user needs

"CICS Version 1, Release 7 addresses numerous user requests and satisfies the following requirements submitted by the Guide and Share user groups."

With that brief commentary in its announcement of the new release of CICS, IBM proceeded to outline more than 55 requests and requirements that it had satisfied in the enhanced offering. Whether it was a marketing or public relations maneuver or a sincere attempt by IBM to recognize the work of the two largest IBM users groups, the acknowledgment surprised and impressed users.

"Of course, part of it is marketing," said Donald Langston, associate director of Schering-Plough, Inc.'s Memphis, data center and corporate computer operations. "But I think IBM was really trying to demonstrate that it is sensitive to users' requirements," he added.

Harvey Kramer, senior information systems consultant with Southern California Edison Co. in Rosemead, Calif., said the recognition was IBM's way of underscoring the importance of users groups.

"User groups represent multiple customer interests," Kramer said. "IBM is saying that this is the way to get your voice heard. IBM cannot take care of everyone, but it can address the things that are of high priority to a variety of companies."

While Langston is manager of Guide's Data Base & Data Communication Division, and Kramer is deputy manager of Share's CICS Project, both men said that they spoke for their firms and not as representatives of their users groups.

— John Gallant

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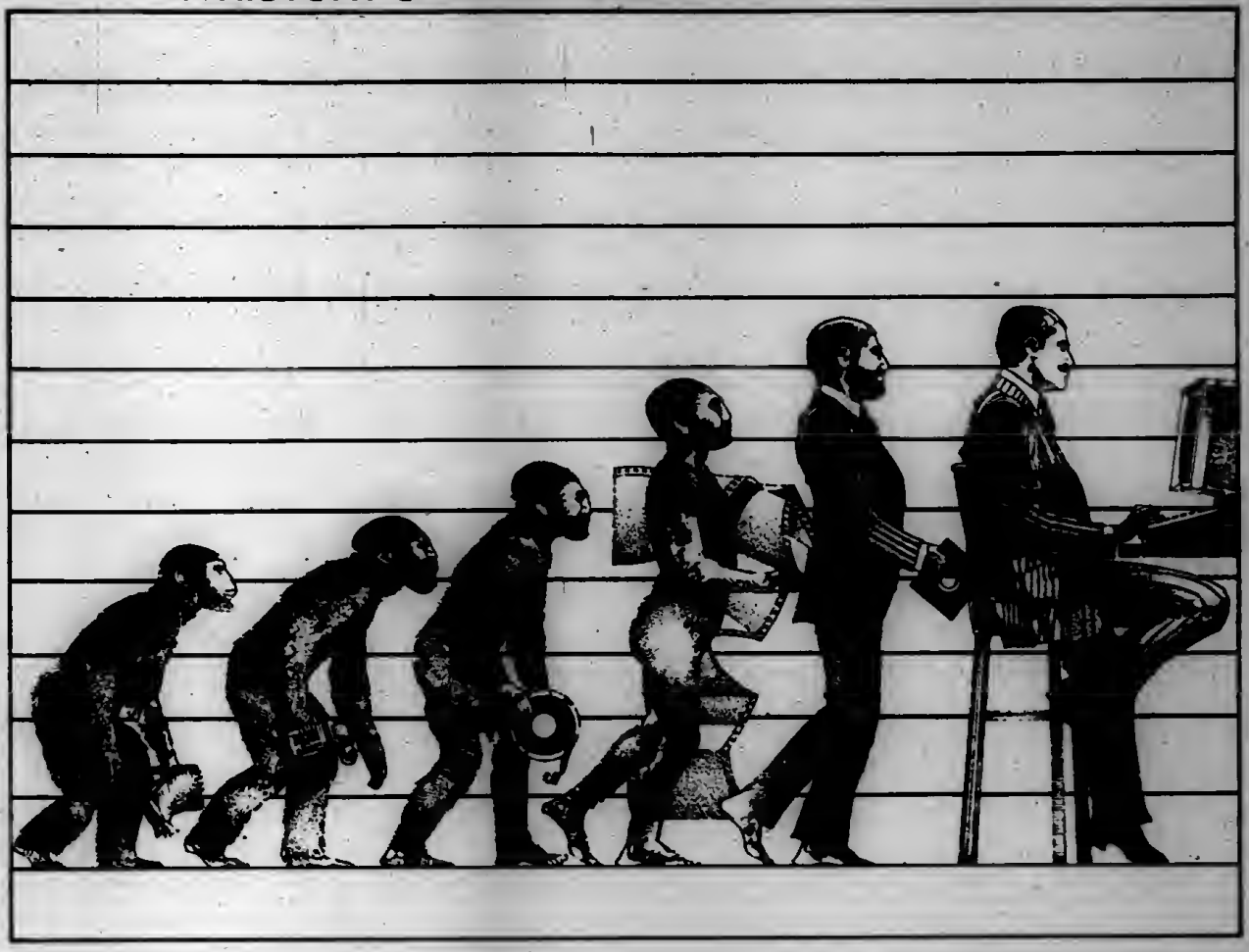

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NETWORK from page 1

ties. A backbone network of two AT&T T1 lines now connects the main facilities. Two channel banks are required to digitize voice so it can be transmitted at speeds of 32K bit/sec. over the lines, and front-end processors feed channel banks so that data can be sent over the T1 lines. Microwave facilities connect the nine regional offices to the two central facilities.

Private branch exchanges route traffic between principal McDonnell Douglas offices. The two main facilities and a third facility in Huntington Beach, Calif., are equipped with Northern Telecom, Inc. SL-100 PBXs. The other offices house Northern Telecom SL-1 switches. The PBXs are used for voice, dial-up, data and video transmissions.

McDonnell Douglas chose a combination of twisted-pair and fiber-optic media to link the PBXs and users at the various facilities. Twisted-pair wire connects employees to the network, and fiber-optic backbones are used in various buildings. Augustin noted that there is extra fiber bandwidth that can be used if the network has to be expanded.

The migration from Centrex to PBXs was divided into phases, with the first phase being the installation of smaller switches and microwave facilities at the remote offices.

Like most first-time installations, problems were expected, and they were encountered. "We had trouble getting easements for the microwave facilities," said James C. McAllister, director of telecommunications at McDonnell Douglas. "I don't know how some companies that plan on installing hundreds of earth stations will be able to manage installation." Microwave antennae have to be approved by local building commissions.

> *'It takes two pages to list all the lines we had to cut over to.'*
>
> — D. C. Augustin
> McDonnell Douglas Corp.

At the end of 1984, with the smaller switches up and running, the company began to install the SL-100 PBX, a relatively new switch from Northern Telecom. "The software was not very mature at the time we were installing the switches," Ridenhour noted. "That situation created some problems for us." Since the company was an early user of the switch, no one had tested the product enough to understand fully its functions and its limitations.

Ridenhour maintained that Northern Telecom has solved the problems. With initial bugs fixed, the first big switch was installed at the Huntington Beach facility in February 1985.

In June, the last switch was up and running at the facility here, which has 37,000 employees. "It takes two pages to list all the lines we had to cut over to," Augustin noted. "There are 27,000 trunks at our facility [here]. Switching them all at one time was nerve-racking." If the switch didn't work, no phones would ring at the aerospace and time-sharing company.

Adding to the problem was the software's wide degree of flexibility. "We should have decided which options we wanted when we first looked at the switch," Ridenhour added. "We were changing our requirements at each site."

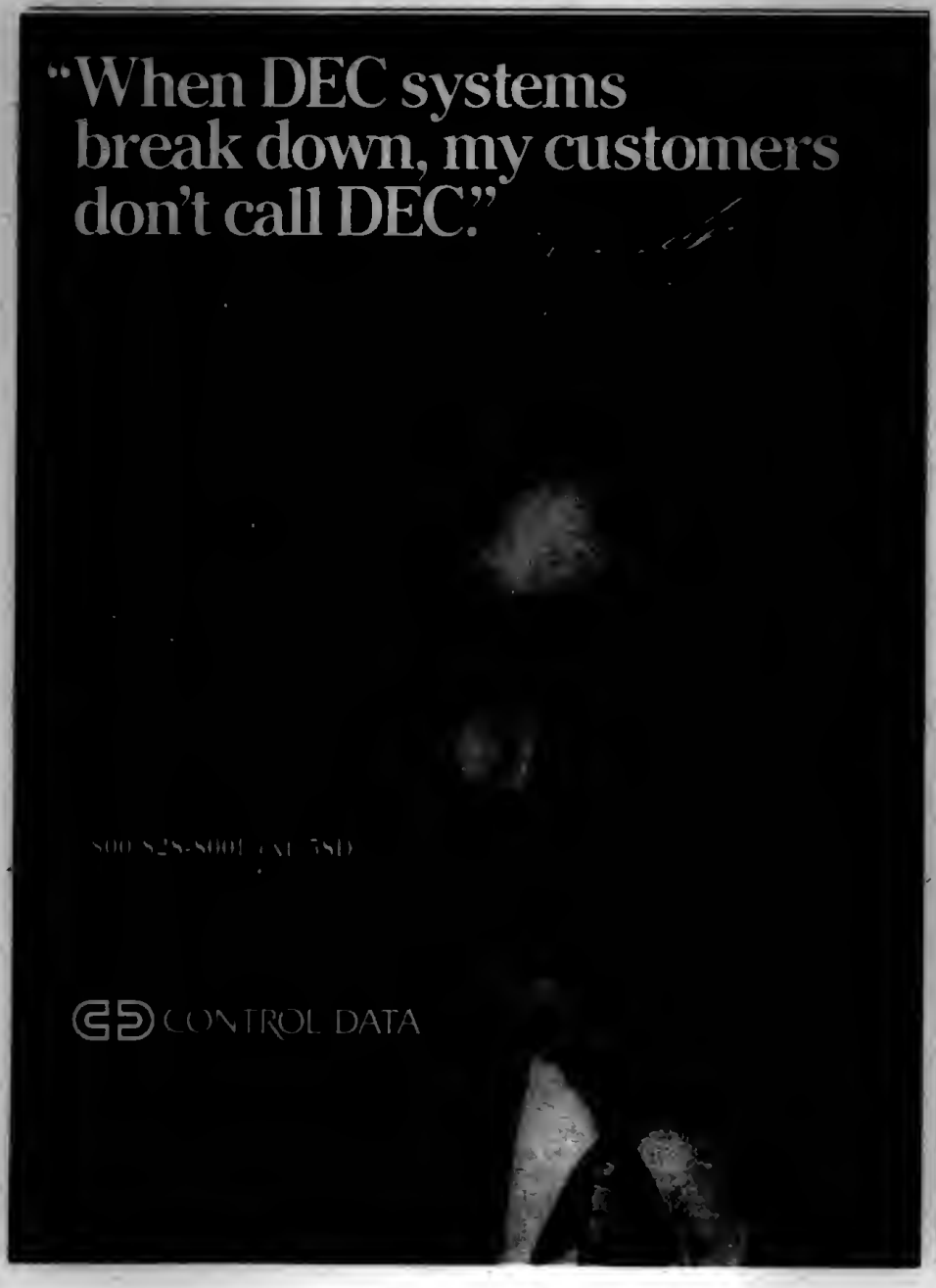
The problems were minor for such a large network, according to Ridenhour. He estimated that the network handles 400,000 transmissions each day. If McDonnell Douglas were a private telephone company, it would be considered the 22nd largest, according to the vice-president.

Thus far, Ridenhour has deemed the implementation successful.

Ridenhour considers training a key reason for the success. All employees were given classes on the system, and the company supplemented vendor training materials with its own offerings.

For two weeks, employees had two telephones on their desks: one for the old system and one for the new. "We wanted to make the transition as simple as possible," Ridenhour said.

Ridenhour estimated that the system would save the company $15 million a year.



User claims NCR sold faulty mini, seeks $1.1 million

By Clinton Wilder
CW Staff

PONTIAC, Ill. — A family-owned accounting firm here is seeking $1.1 million in damages from NCR Corp. for delivering and failing to service an allegedly bug-ridden minicomputer system nine years ago.

The owners of Pontiac Services, Inc., have failed in their two-year battle to have the case heard in court but will argue the case before a federal arbitrator in Chicago on Sept. 11. The Monical family claims its NCR 8200 Century minicomputer, purchased in 1976, failed to run properly, dumped stored data without warning and inaccurately printed textual material.

The Monical case is one of several multimillion-dollar legal actions against NCR stemming from allegedly defective mini systems that the Dayton, Ohio-based vendor sold in the late 1970s.

Successful lawsuits

Earlier this year, San Luis Obispo, Calif., businessman Alex Madonna won $5.8 million in damages in a lawsuit stemming from a defective Model 499, the largest amount ever awarded in a computer misrepresentation case [CW, June 3]. In 1982, NCR paid $2.6 million to an Oakland, Calif., dry cleaning firm that had bought what it claimed to be a bug-ridden 8200 Spirit in 1977 [CW, Nov. 1, 1982].

Pontiac Services originally sought $5.6 million in damages when it sued NCR for fraud in Livingston County, Ill., Circuit Court in 1983. But the court upheld NCR's claim that the case did not involve fraud, and therefore, must be resolved through arbitration, the procedure specified in NCR's general customer contract for settling misrepresentation disputes. The Monicals appealed that decision to the Illinois Supreme Court, but the higher court declined to hear the case, sending it back to arbitration.

Steven Monical, one of the plaintiffs, said an arbitrator can award only actual rather than punitive damages, so the amount sought was reduced to $1.1 million. He said an out-of-court financial settlement is still possible, but he said the amount currently being offered by NCR is "ridiculously low."

Alleged that machine became unusable

The Monicals claim that their $47,000 NCR 8200 minicomputer had problems from the beginning but that the system became virtually unusable in the second half of 1979.

"The machine would just halt, stop processing, and we would have to rerun the whole job," according to Monical. "The printer would insert extra spaces between characters and lines or skip lines altogether. The CRT unit would just go crazy, with characters dancing across the screen."

The plaintiffs also allege that NCR service personnel from the company's Peoria, Ill., office repeatedly failed to correct the minicomputer's problems, despite the $10,500 the Monicals paid in maintenance charges.

"They mostly pointed elsewhere, saying it wasn't a hardware problem but a problem with the power supply, or software or with different operators of the system," according to Monical. "They finally gave up sometime in 1980."

In their 1983 court complaint, the Monicals alleged that an NCR repairman admitted in 1980 that the company "did not have engineers capable of correcting the malfunction." They further charged that NCR did not test the minicomputer before its sale.

The corporate attorney representing NCR in the case could not be reached for comment before press time.

Wang buys switch maker

LOWELL, Mass. — Wang Laboratories, Inc. expanded its move into data communications last week by announcing an agreement to invest in a vendor of department-size digital voice/data switching systems.

Wang said it will acquire an initial minority stake in Los Gatos, Calif.-based Telenova, Inc. Wang added that it will increase the investment to 40% — which a spokesman said represents a value of $15 million — by March 1986 and has the option to increase it further to 51% by December 1986.

The transaction was similar to an agreement reached in April 1984 with Intecom, Inc., a vendor of large private branch exchange systems. Wang owns approximately 22% of Intecom.

In a prepared statement, An Wang, chairman and president of Wang, said the Telenova equipment can quickly be integrated with Wang systems. With agreements for both Intecom and Telenova switching equipment, Wang is "in a very strong position to most effectively integrate both computers and communications to provide total office automation solutions for all sizes of offices," he said.

Telenova is headed by Edmund J. Keane, its founder, chairman and chief executive officer, and has received prior financing through venture capital sources.

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Net control tools help managers keep users happy

By Paul Korzeniowski
CW Staff

Charlie sits at his terminal and presses the Enter key on his IBM 3278 terminal.

From the terminal, the data journeys to an IBM 3274 controller that is connected to an AT&T Information Systems modem that passes it to an Arus Corp. bridge for a Nynex Corp. telephone line that hands it to an AT&T Communications long-haul facility that works with Rockwell International Corp. digital microwave equipment and transports the data to a Bell Atlantic Corp. telephone line that uses another bridge to send the data to the central site's T-Bar, Inc. matrix switch that feeds an IBM front-end processor that works with an IBM mainframe where information is processed and sent on a return trip, if all connections are working properly.

Often, a connection may not be functioning, creating problems for Charlie and for the manager who is responsible for making sure that Charlie remains a productive, happy user.

A number of companies are installing network management systems to keep users like Charlie happy. Network management systems vary, depending on what equipment they monitor for each connection and what information they provide. Some

See MANAGE page 13

Network management and control packages

Vendor	Model	Hardware on which it is based	Maximum Number of Monitors	Color Monitors	Storage Capacity (bytes)	Number of Circuits	Line Transmission Speed (bit/sec.)	Type of Signaling	Requires Intelligent Modems	Wrap-around Box	Trouble Tickets	Summary Log	History Summary	Inventory Reports	Price
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AT&T	Datephone II Level 3 Network Control	Proprietary	1	No	256K	400[1]	9.6K	Outband	Yes	No	Yes	No	Yes	No	$11,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Avanta-Garde Computing, Inc.	Net/Alert	Perkin-Elmer Corp. 32000	12	Yes	Unlimited	4,096	56K	None	Yes	No	Yes	Yes	Yes	Yes	$200,000-$400,000-
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Codex Corp.	Distributed Network Control System (DNCS) 200	Proprietary	1	No	1.5M	16	16.8K	Outband	Yes	Yes	No	No	No	Yes	$9,200-$13,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Codex	4850	Data General Corp. MV/4000	6	No	50M-1G	496	16.8K	Outband	Yes	Yes	Yes	Yes	Yes	Yes	$84,400
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Digital, Inc.	Network Analysis and Management System	Digital Equipment Corp. Microvax	3	Yes	30M	2,000	56K	Inband and outband	No	Yes	Yes	Yes	Yes	Yes	$50,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Digitel	Modem Diagnostic and Test System	IBM Personal Computer	1	Yes	360K	576	14.4K	Outband	No	Yes	No	No	No	No	$850/modem
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
General Datacom Industries	NMC 45	Proprietary	4	Yes	10M	64	64K	Outband	Yes	Yes	Yes	No	Yes	Yes	$16,000
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Paradyne Corp.	Analysis 5500	Zilog, Inc. 8000	3	Yes[3]	52M	150	Any	Outband	Yes	No	No	Yes	Yes	No	$19,500
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Racal-Milgo, Inc.	Communications Management Series (CMS) 2001	DEC PDP-11	1	Yes	10M	32	19.2K	Outband	Yes	Yes	Yes	Yes	Yes	Yes[4]	$14,795
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Racal-Milgo	CMS 2010	DEC PDP-11	4	Yes	21M	128	19.2K	Outband	Yes	Yes	Yes	Yes	Yes	Yes[4]	$25,950
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

MANAGE from page 12

center on host-based software, and others work with intelligent modems. This report examines modem-based packages.

These systems consist of hardware; software, which usually includes a data base; and diagnostic devices residing at various points on a network. The packages' control capabilities can help prevent a line problem, correct one if it occurs and monitor a variety of equipment. A number of packages also supply reports that aid in examining how often a line may malfunction and that track the number of telephones, telephone lines and modems that a company may require.

Although network control packages have been available for more than 10 years, a random poll by *Computerworld* of communications managers at half a dozen large companies found that managers listed selection and installation of a network control package as their departments' most important objective.

"Now, our network control tools provide bits and pieces of the information we need," noted Sammy D. Taylor, director of telecommunications at National Gypsum Co. in Dallas. "We need a complete system that supplies information to end users, technicians and upper level managers so everyone understands how the network is functioning."

> ”
>
> *'We need a complete system that supplies information . . . so everyone understands how the network is functioning.'*
>
> — Sammy D. Taylor
> National Gypsum Co.

Two factors are fueling the interest in network management: the divestiture of AT&T and the increasing complexity and importance of corporate networks.

Before divestiture, AT&T provided one-stop shopping for telecommunications, shouldering end-to-end responsibility for voice/data services. Today, a number of vendors are responsible for pieces of connections used by employees like Charlie. If a manager calls one vendor to examine a problem, it will probably blame another vendor's equipment. "Since divestiture, there has been a lot of finger pointing and trouble coordinating problems with the [former Bell operating companies]", according to Al Watrid, manager of technical services at Cuna Mutual Insurance Co. in Madison, Wis. "It took operating companies almost 10 months to install one circuit for us in Southern California."

A number of vendors have attempted to provide the service that AT&T previously supplied. "Whenever a vendor manages a network, it will cost a company 30% to 40% more to run than if a company managed the network [itself]," noted Gerald P. Ryan, president of Connections Telecommunications, Inc., a Bridgewater, Mass., consulting firm.

Earlier this year, Cuna Mutual hired a vendor to manage its network but was not satisfied with the service it received. "We are now looking at buying our own network management package," Watrid said.

One consultant urged other companies to follow Cuna's lead. "I would recommend that companies divorce themselves from all telephone companies and vendors and take network control into their own hands if they have the staff and tools," suggested Gabriel Kasperek, president of Kascom, Inc., a consulting firm in Park Ridge, Ill. A primary benefit of managing a network is that an in-house staff will fine-tune a network so it will run most effectively.

A second factor fueling the interest is that networks are becoming more complex and more important to many businesses. Often, businesses could function when a network was down because networks merely supplemented business operations. Today, a number of financial, airline and information businesses rely on networks so greatly that when a network goes down, a company cannot function until it is restored. For example, if a central switch at a stock brokerage house went down for 5 minutes, the loss could be catastrophic.

However, even in companies where a network does not pump a company's lifeblood, interest in network control is increasing. "Our networks are not as vital to our business as networks are to banks or insurance companies," National Gypsum's Taylor said. "I would rate their importance as a six on a scale of one to 10."

National Gypsum has seven networks used by separate divisions and their remote sites. Taylor has just begun the evaluation process for a network control package that could be used with the various networks and plans to have it installed by the end of the year.

When managers like Taylor examine these packages, they discover a range of prices of the number of lines they can monitor and of the type of tests they can perform. Some packages are based on hardware as simple as an intelligent terminal; others are as sophisticated as a Digital Equipment Corp. VAX supermini.

In most companies, a network control operator who is a member of the computer operations staff is responsible for the equipment. Sitting at a central terminal, the operator can monitor all network connections,

See MANAGE page 14

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MANAGE from page 13

even those in remote locations.

This is possible because various points on a net are equipped with intelligent devices that monitor transmission paths. Paths vary in quality for two reasons: Noise or static can cause data to be lost or incorrectly transmitted; also, data terminal equipment can malfunction and block a path.

The intelligent devices monitor telephone line and equipment performance and then transmit this information through an unused portion of a line to the central network control station where the operator sits.

Vendor offerings use various portions of a line to transmit diagnostic data. Some send it over a frequency band that is outside the main data stream, hence the term "outband signaling;" other manufacturers intersperse control data within the data stream in a technique known as "inband signaling." Either technique enables network and diagnostic data to be sent simultaneously.

Because of signaling differences, network management systems require certain equipment. Typically, modem manufacturers have optimized their packages to work with their modems. "Most of the major products do not offer a great deal of flexibility to incorporate other vendor's equipment," Kaxcom's Kasperek said.

> *'Whenever a vendor manages a network, it will cost a company 30% to 40% more to run than if a company managed the network [itself].'*
>
> — Gerald P. Ryan
> Connections Telecommunications, Inc.

Many vendors sell wraparound boxes to solve this problem. A wraparound box straddles a modem, monitoring both digital and analog sides. Whether generated by the modem itself or captured by wraparound devices, the diagnostic information gathered is then sent to a central monitoring point. There, some packages automatically evaluate the data; other packages work interactively with an operator.

Alarm notifications are an example of automatic processing. When a system is first installed, a communications manager can set desired quality parameters. If a line's noise level exceeds the parameters, the system will flag the problem, and bells will ring, alerting an operator. Other packages require that operators constantly monitor the data and determine when a problem is occurring.

Some packages sound an alarm before a line reaches the point where data has been damaged. In those cases, a terminal operator is then left with a series of options. He can perform loopback, bit error or other tests that help to pinpoint line problems. When it is located, he can either call a vendor that will fix the problem or, in certain situations, fix the line himself. With some systems, an operator can disconnect a modem, switch to a spare modem and reestablish the connection.

Not all packages sound an alarm before a line is down; some ring only when the line goes down. "Being able to switch a line before it goes down was a key reason for our selection of a package," noted Bill Wolf, assistant vice-president of telecommunications at Pittsburgh National Bank, which has been using a net control package from Racal-Milgo, Inc. since 1981.

Wolf claimed that the network management system, which cost the bank more than a $1 million, has helped the bank expand its branch services, add automated teller machines and monitor how its network is used.

"The system has more than paid for itself," he noted.

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IBM PC Update
December, 1984

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ComputerWorld
March 20, 1985

"Offering true integration among all of its applications modules... [Enable is] a powerful production tool that can serve everyone in the office, from data entry personnel to the vice-president of marketing. Each module could stand as a full-powered application in its own right."
PC Magazine
February 19, 1985

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Software Digest Ratings Newsletter
Rating of 15 Integrated Products
December, 1984

"Enable, a five-function integrated system from The Software Group, merits a close look by any individual or organization interested in a solid package that is well balanced in all of its applications."
Popular Computing
March, 1985, Paul Goldner, Raymond Hood, Yoram Livtzman, Michael Wilding

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Personal Computing
March, 1985

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Business Computer Systems
January, 1985

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April, 1985

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Computer Buyer's Guide and Handbook
November, 1984

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Lack of features weaken net management packages

By Paul Korzeniowski
CW Staff

Keeping a line up and running is one problem; determining how the line is being used is a second concern. To manage a network properly, companies need to know what information is being transmitted, how long system response time is and where line problems are occurring. Most network management systems adequately keep lines up and running, but few supply the tools to manage a net.

One management tool is trouble ticketing. Whenever alarms are sounded, a system can produce tickets that state the time a problem occurred, the time it was fixed and the line or equipment that was experiencing the problem. This and other information is then stored in a data base from which reports concerning items such as the network's average response time and line quality can be ascertained. With the reports, managers can pinpoint recurring problems, determine how a network is being used and plot the future growth of the net.

Also, a company can track its telephone lines, modems and other communications equipment with inventory reporting capabilities incorporated in most packages.

Despite the benefits, few companies have purchased these packages because they are rather limited. "The vendors have been slow to offer the features that users desire," noted Mark Larow, a consultant with Network Strategies, Inc., a Burke, Va., consulting firm.

A chief complaint concerns the systems' management reporting capabilities. "In most cases, the management reports only monitor connections on a network, they do not include information about how the network is being used," noted Gerald P. Ryan, president of Connections Telecommunications, Inc., a Bridgewater, Mass., consulting firm. "These packages could easily be designed to include information concerning what data is going where over a line, but companies seem unwilling to take this step."

Lack of ease of use is another shortcoming. Many packages require that an operator fully understand how a network operates. "The packages are only as good as the person analyzing the data," noted Steven H. Booth, president of Communication Consulting Associates, Inc. in Framingham, Mass. "In some cases, the person may not have a great deal of technical experience and may supply an inaccurate view of how the network is functioning."

Some vendors are attempting to overcome these limitations. A number of packages are incorporating simpler operator interfaces and color monitors that graphically depict network operations. Other packages are making analysis more menu or command driven.

But even for a large corporation, these packages are expensive and difficult to cost justify.

Ryan stated that current offerings represent a first step toward the products that companies require. "Better tools will become available as users put more pressure on vendors," he concluded.

Staff key to net gain

Once a company has found the right network management package, it has to locate the proper people to run it — a process that can be more time consuming and frustrating than picking a vendor.

"Finding knowledgeable people to run a network can be a problem," noted Sammy D. Taylor, director of telecommunications at National Gypsum Co. in Dallas.

The company currently has two people working in network management, and Taylor predicted that the staff will at least triple in size when a new package is selected and installed by the end of the year.

Taylor's estimated growth may be conservative if one examines changes made at Pittsburgh National Bank since it installed a system in 1981. Its staff has grown from three to 20 network management operators, according to Bill Wolf, assistant vice-president for telecommunications.

Where can a company find skilled network operators? Another company's personnel represents a principal source. However, robbing other companies of their net management employees can inflate salaries and create ill feelings.

Companies like National Gypsum plan to take their own employees and train them to become network managers. "I don't think we really have any other choice," Taylor stated.

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Tektronix unwraps AI workstations, Lisp version

Lowers price tag on 4404 AI system

By Dennis Rainsandt
CW Staff

BEAVERTON, Ore. — A pair of artificial intelligence workstations, powered by the Motorola, Inc. 68020 processor, were released by Tektronix, Inc.'s Information Display Group. At the same time, the company introduced a version of the Lisp programming language and dropped the price of its year-old 4404 AI system.

The workstations are targeted at AI development, applied AI and advanced software engineering, the company said.

All members of the 4400 family reportedly feature Xerox Corp.'s Smalltalk-80 operating system and a C compiler.

Outgrowth of AI research

The 4405 and 4405 AI workstations join Tektronix's 4404 AI system, the vendor said. The products are said to be an outgrowth of Tektronix Laboratories' AI research efforts begun in 1982 to study knowledge engineering, expert systems, design support environments, AI languages and environments, algorithmic techniques and symbolic computation.

The top-of-the-line 4406 includes a 19-in. display with a resolution of 1,280 by 1,024 pixels; 2M bytes of dynamic random-access memory (RAM), expandable to 4M bytes; a 32M-byte virtual memory address space; and a 90M-byte hard disk with a 5¼-in. floppy drive, according to Tektronix.

The use of the 68020 chip, combined with a Motorola 68881 floating-point coprocessor and extended memory capacity, is said to give the 4405 100% higher performance than last year's model.

The 4405 reportedly offers 32M bytes of virtual memory address space and 1M byte of dynamic RAM, expandable to 5M bytes. This compares with the 4404's 6M bytes of virtual memory and RAM expansion of 4M bytes.

The 4405 includes a 13-in. screen with a 640- by 480-pixel viewable display.

The system comes with a 45M-byte hard disk drive and a 5¼-in. floppy drive and has either a three-button mouse or a joystick, according to the vendor.

Implementation of standard Lisp

The Tek Common Lisp language, developed in conjunction with Alameda, Calif.-based Franz Lisp, Inc., is said to be a full implementation of the standard Lisp as documented in Guy Steele's *Common Lisp, The Language*.

The language has been optimized for performance on the 4400 family, Tektronix said.

A license for the Tek Common Lisp costs $6,000 and includes a year of upgrades and maintenance, the vendor said.

Tektronix slashed the price of the 4404 from $14,950 to $11,950. The 4405 model costs $14,950, and the 4405 costs $23,950.

Users of the 4404 may upgrade to the 4405 via the 4404F05 Field Kit, which costs $3,500 and retrofits the 4404 with the 68020 CPU and the 68881 floating-point coprocessor, Tektronix said.

The newly announced products are scheduled for delivery in January 1986.

More information can be obtained from Tektronix through P.O. Box 500, Beaverton, Ore. 97077.

Chemical firm finds solution in micro-mainframe bond

By Maura McEnaney
CW Staff

WOODCLIFF LAKE, N.J. — William Heany may protest that he is only an end user of computer systems, but this obscures the fact that it was his suggestion that paved the way for use of micro-mainframe links at Witco Chemical Corp., a $1 billion chemical and petroleum products company. Heany's proposal of a terminal emulation product resulted in dramatic corporate savings and improved operational efficiencies for his company.

> *'We felt we didn't have any computing power on a dumb terminal.'*
> — William Heany, Witco Chemical Corp.

Heany is manager of Witco's distribution and traffic systems division, which, among other things, keeps track of the 1,200-car rail fleet that transports the company's oil and chemical products across the U.S. Daily reports on car location and cargo status are batched processed by the company's IBM 3083 mainframe, running IBM's OS/MVS operating system, and distributed to 10 Witco locations throughout the country.

In early 1984, Witco converted from leased terminal controllers and printers to personal computers and PCpath, Pathway Design, Inc.'s micro-mainframe product. The results were first-year savings of more than $30,000, according to Anthony Falato, Witco's manager of systems development.

Now, once traffic reports are batched processed on the mainframe, Witco's remote users can log on to the corporate mainframe via micros running PCpath, which is an IBM 3270 terminal emulation package. This package then allows them to extract reports from the mainframe's data.

Prior to obtaining IBM Personal Computer XTs and PCpath, Witco's 10 field locations leased IBM's 3276 terminal controllers and IBM 3276 printers at the cost of about $8,000 per month.

"They were nothing more than dumb terminals, and there were other computing functions that we wanted in our remote locations," Heany said. "In addition to maintaining a connection to the host at Woodcliff Lake via [Systems Network Architecture] protocols, we recognized the need to channel communications to other areas. We felt we didn't have any computing power on a dumb terminal," he said.

Witco rejected an IBM representative's recommendation of downloading information onto the IBM Personal Computer XT hard disk and spooling that data onto its Epson America, Inc. FX-100 printers. Instead, the company opted to be an early user of PCpath, used in conjunction with XTs.

Heany said that the company selected PCpath because of its ability to hook up with Witco's existing printers. Heany and others talked with early users of PCpath, and although they were using different applications, there were enough similarities to give the product a green light.

At Witco, PCpath is used to maintain a communications link with the corporate mainframe and allows the FX-100 printer to appear as an IBM 3287 printer. The IBM Personal Computers can be used with asynchronous communications boards and modems to communicate externally with time-sharing information systems, Heany said.

To expedite training on the Personal Computers, Witco sent the remote users PCpath cardboard templates that indicated key definitions for the 3270 terminal and allowed users to teach themselves how to use the emulation packages, Heany explained. Consequently, Heany said, remote users were able to use the Personal Computers to extract needed reports within three months of installation.

Early-user status did not cause Witco to shy away from selecting the product, Heany said, because PCpath provided capabilities that the company needed. And now, after a year's experience with the product, Witco is planning to upgrade to Version 2 of PCpath. The new product, when available, will permit users to conduct up to five concurrent sessions on the mainframe.

The company also uses PCpath for local terminal emulation at its research and development group in Houston. According to Heany, implementation of a micro-mainframe link meant teaching users about mainframe access and personal computer operation at the same time. "The [personal computer] ball game here at Witco is so new that we're going through some growing pains," he said.

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NEWS

WASHINGTON UPDATE
CW Washington Bureau

IRS plans pilot program for electronic tax filing

WASHINGTON, D.C. — The Internal Revenue Service recently announced plans to conduct a pilot program in 1986 permitting commercial tax-return preparers to send returns electronically to the IRS, a move that may cut processing time at the IRS by two to three weeks.

The IRS said it wants to take advantage of the fact that a growing number of tax preparation firms use computers to prepare individual income tax returns.

The IRS said the pilot will be limited to refund returns prepared for taxpayers in Phoenix, Cincinnati and the metropolitan area around Raleigh, Durham and Fayetteville, N.C.

Firms interested in participating should contact the Electronic Filing Project Office, IRS, 1111 Constitution Ave. N.W., Washington, D.C. 20224.

Bill curbing computer sales to South Africa advances

WASHINGTON, D.C. — A compromise version of the Anti-Apartheid Act of 1985, which would curb sales of computers to the Republic of South Africa, was recently approved by the U.S. House of Representatives and awaits a U.S. Senate vote in September.

Before leaving for the August recess, House and Senate negotiators approved a compromise bill that prohibits future sales of computers to apartheid-enforcing agencies in South Africa's government.

The compromise bill closely follows the Senate version of the legislation, which was supported by the U.S. computer industry [CW, June 17].

The Computer and Business Equipment Manufacturers Association opposed the House version, which banned computer sales to all South African government organizations.

The Senate, which was unable to vote on the bill due to objections raised by Sen. Jesse Helms (R-N.C.), will resume debate on Sept. 9.

FEC to sell computer access to campaign finance records

WASHINGTON, D.C. — The Federal Election Commission (FEC) recently announced plans to start a subscription service in September that will provide direct on-line computer access to FEC campaign finance records for the news media and other members of the public.

The agency said it plans to provide information for the 1984 and 1986 presidential and congressional election campaigns in two formats. The first format would enable microcomputer users to obtain raw data for storage on floppy or hard disks.

The second format would provide summary tables on candidate finances to remote terminals, like the pilot program now under way with several state election offices [CW, Sept. 10].

GSA offers U.S. agencies programmer's workbench

WASHINGTON, D.C. — The General Services Administration (GSA) recently opened a center for demonstrating to government DP managers how commercially available software tools and processes can improve information management at U.S. agencies.

The center, recently unveiled at GSA's Office of Software Development and Information Technology in Falls Church, Va., features a programmer's workbench that has a family of automated workstation systems for software development, maintenance, conversion and project management tasks.

The center also provides demonstrations of microcomputer-based text search-and-retrieval systems and data base management systems, GSA said.

More information can be obtained from the GSA Office of Software Development and Information Technology, Suite 1100, Two Skyline Place, 5203 Leesburg Pike, Falls Church, Va. 22041.

Computer art contest slated

MELBOURNE, Australia — A worldwide computer art competition is being held in association with the First Pan Pacific Computer Conference (PPCC-1) here Sept. 10-13. CW Communications, Inc. — publisher of *Computerworld* and 53 other computer publications in 24 countries — is sponsoring the contest.

Entries must be produced by computer and should be suitable for display, a conference spokesman said. There are no limitations on the size of the artwork.

Each entry should be accompanied by a description of how it was produced.

Entries must be submitted in time to reach the PPCC-1 organising committee by Aug. 23.

Entries will be judged in one of two categories: individual or organization. The prize for the individual contest is $1,000, and the prize for the winning company entry is a trophy.

Each individual or company is limited to a maximum of three entries, the spokesman said.

Entries will be displayed and the winners announced during the conference.

Entries and information requests should be sent to First Pan Pacific Computer Art Competition, P.O. Box 212, 11 The Avenue, Hampton, Vic., Australia 3188.

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Army system combats backlog

By Bonnie Reinstedt
CW Staff

WASHINGTON, D.C. — An automated system for processing congressional inquiries to the U.S. Army has slashed response time from an average of 77 days to 22 days. The system allows the Army's Congressional Inquiry Division to handle 40,000 written and 20,000 telephone inquiries per year with the same size staff that processed a total of 6,000 inquiries a year five years ago, according to Col. Michael J. Connor, chief of the inquiry division.

Connor's division receives mail from congressional offices, routes the requests for information to the proper Army field agency anywhere in the world, gathers the needed information and responds to the congressional office where the inquiry originated, Connor said. Until late in 1984, the job was done manually.

The inquiries are given a high priority by the Army, whose goal is to have them answered within 30 days, Connor said. The number of inquiries multiplied rapidly in the last five years to the point where the target turnaround time could rarely be achieved, Connor said.

Under the manual system, mail was opened, sorted, date stamped, given a control number, microfilmed to ensure against loss and then routed to an action officer, Connor said. The action officer wrote an acknowledgment letter to the inquiring congressional office, decided where to get information and sent the inquiry along. After receiving a response, the officer put the information in the proper format and sent the handwritten result to a central word processing office for typing. After proofing, the final result was sent to the appropriate congressional office.

Handling 6,000 inquiries a year, the manual system was slow, with a 40-day turnaround time, but worked fairly effectively, Connor said. By August 1984, with a more than eightfold increase in inquiries, the system had slowed to the point where the average response time was 77 days, Connor said.

Connor looked closely at the steps involved in manually processing inquiries and discovered that 17 of the 57 separate procedures could be eliminated before automating, he said.

Also, the manual system used three work centers — the inquiry control center, where correspondence was logged in and tracked; the action officer center that worked the case; and the word processing center where final drafts were typed. With the new system, the action officer has the power to do all the functions previously performed in the three work centers, Connor said.

The Army's system comprises 65 Recognition Equipment, Inc. Inforex 9000 terminals in a local-area network, connected by 9.6K bit/sec. Gandalf Co. modems to 21 Inforex 9500 processors and three Inforex 9800 main file processors. A 400M-byte hard disk and two 200M-byte hard disks plus a tape backup system complete the setup.

Now, an incoming inquiry is date stamped and handed over to the officer, he said. The officer enters data in 21 fields, including the requesting constituent's name, the congressional inquirer's name, the field agency code, special remarks that will help the researching agency and the receipt date.

When the action officer writes the record, the system automatically generates an acknowledgment letter to the congressional inquirer, giving the constituent's name and the case's code number, Connor said. It also generates a "tasker" — the cover sheet that goes to the investigating agency. The tasker includes all the information the agency needs to work on the case, including general data such as the division's facsimile machine number and tips on how to respond to an inquiry.

The data base is searched for all prior cases in the constituent's name in recent years to earmark duplicate requests, Connor said. This cross-checking system eliminates duplicate searches by allowing the action officer to check the microfilm to see if the request has already been answered.

A word processing document shell is also generated automatically when the record is written, Connor said. It includes a return address, the salutation and the first paragraph. When the answer comes back, the action officer has only to add the remaining paragraphs, he said.

The division has added facsimile capabilities so that large volumes of correspondence can be transmitted without going through the mails, Connor said. Whether sent by facsimile, mailed or phoned in, all inquiries are read, acknowledged and sent to the proper agency for reply within eight hours of receipt, he said.

An Open Case Report gives the status of every unfinished case. Versions of the report are generated for each action officer, each congressional inquirer and each field agency so that everyone involved in the system knows where they stand and can spot any problems left unresolved.

Officer advises, get input on OA systems

WASHINGTON, D.C. — Management must be heavily involved in the development of office automation systems, said Col. Michael J. Connor, chief of the U.S. Army's Congressional Inquiry Division.

When Connor decided to automate a manual system used to answer congressional inquiries to the Army, he questioned each of the division's staff members about what they liked and did not like in their jobs.

"Based on those [staff] responses, it became very apparent to me that we had reached the point where we were literally going under. . . . The [staff] knew that the [manual] system was not responsive in the way that we wanted it to be.

"Managers have got to know what their organization has to do and where the payoff is," he said. After identifying the critical success factors for his organization, he was able to communicate what he needed to the contractor, Recognition Equipment, Inc.'s subsidiary, Inforex, Inc.

The first step in the project was to manually simplify the manual system, Connor said. "Unless a manager does that up front . . . automation is probably not going to solve any of his problems," he said.

After finding out what did and did not work well, Connor and his staff designed screens and user interfaces that would be easy for the staff to use.

Lawmakers seek to widen scope of wiretap statute

By Mitch Betts
CW Washington Bureau

WASHINGTON, D.C. — It is not illegal to wiretap or intercept interstate data communications or electronic mail messages, because the 1968 federal wiretap statute protects only aural, not digital, communications.

To fill this gap in federal law — which makes modern business communications vulnerable to government and industrial spying as well as to mischievous hackers — members of Congress are drafting legislation to protect the privacy of data communications and electronic mail, according to congressional and industry sources.

U.S. Sen. Patrick J. Leahy (D-Vt.) and Rep. Robert W. Kastenmeier (D-Wis.) will cosponsor the bill and introduce it in September, sources said.

Even before drafting of the bill has finished, the legislative initiative has garnered broad support from a wide range of groups, from the American Civil Liberties Union to the Computer and Business Equipment Manufacturers Association (Cbema).

"A broad consensus has developed that the word 'aural' should be stricken from the statute so that all forms of communication are treated the same," observed Oliver Smoot, executive vice-president of Cbema.

This year, Leahy and Kastenmeier are expected to produce legislation that not only strikes the word "aural" from the wiretap law, but also provides privacy protection for electronic mail and cellular phones, a congressional source said.

Michael F. Cavanagh, executive director of the Electronic Mail Association here and a key supporter of the Leahy-Kastenmeier initiative, said the legislation will address several significant concerns:

- It will discourage hackers, industrial spies and embezzlers from gaining unauthorized access to digital networks.
- It will prevent government, law enforcement and security agencies from intercepting or obtaining electronic messages unless they get a court order.
- It will prohibit systems operators from disclosing messages transmitted on their networks, much like telephone company operators are prohibited from disclosing conversations.

Even more important than this legislation, Cavanagh said, is the need for a federal statute that outlaws unauthorized access to private sector computers, since the network's host computer may be more vulnerable than the communications net.

Cavanagh said the Leahy-Kastenmeier bill would complement the computer crime legislation pending in the House Subcommittee on Crime, chaired by Rep. William J. Hughes (D-N.J.). The subcommittee is working on a bill that would expand the scope of the Computer Fraud and Abuse Act of 1984 to cover private computers used in interstate commerce (CW, June 3).

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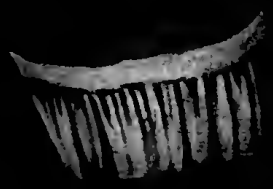

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DBMS opens door to new revenue focus of realty group

System handles member services

CHICAGO — When a national real estate trade association here moved to derive less of its revenue from dues and more from services, it focused on data base management as a critical part in providing efficient service.

During a market slump between 1980 and 1981, the National Association of Realtors (NAR) began to realize it could no longer raise dues to maintain member services. Instead, it would charge for special services — on-line real estate listings and video-based training courses, for example — that it provided to specific groups of realtors.

"We realized that information was the most important resource we have and began our commitment to switching from a dues-oriented to a marketing-oriented organization," said Vincent Amato, NAR's vice-president of computer services. At that time, 90% of the association's revenue came from dues, and 10% came from services. This year, NAR said it expects the split to be 55% from dues and 45% from services, a division Amato said should stay relatively stable in the future.

More efficient processing

The change in focus carried with it a need for more efficient information processing. Using an 8M-byte IBM 4341, the association had kept Vsam files of administrative data — name, address and such information — about its 680,000 members. It maintained separate files for different groups to which those members belonged.

If a realtor was both a member of NAR and an officer on one of the association's committees, his name and other data resided in two different files. If the realtor subscribed to a service, the association set up yet another file that contained the same basic information.

As NAR searched for new DP systems, solving this problem ranked as a top priority. "One of our greatest concerns was that the systems maintain accurate, nonredundant information," Amato said. The association also wanted to find a system that would keep financial information in order.

After a six-month software evaluation, NAR purchased the IDMS/R DBMS, Integrated Data Dictionary, Application Development System/On-Line (ADS/On-Line) and related financial modules from Cullinet Software, Inc.

The association's DP department first used the development tool and data dictionary to set up a data base prototype, then began bringing up applications. Charles Koepke, NAR's MIS manager, explained: "We knew that when we designed the systems we would have to do a lot of up-front thinking and a lot of analysis, and the data dictionary would be the driving force behind that. We were convinced that the initial planning and analysis would help us get the job done faster and get it done right."

Within five months, two staff members implemented a general ledger model, and the association has used this implementation as an example to guide other development projects. Working with ADS/On-Line, programmers have since brought up a number of stand-alone applications, including programs to track political action committee money, realty convention registration and NAR committee membership.

Since it began using the development tool, the association has cut its DP expenditures by about 25%. In addition, Amato said, NAR has cut its DP staff from 55 workers to 42 through attrition, and the smaller staff maintains almost three times the applications load of the larger one. He said some of the productivity gains have come from using Cullinet's packaged financial applications rather than having the staff develop its own.

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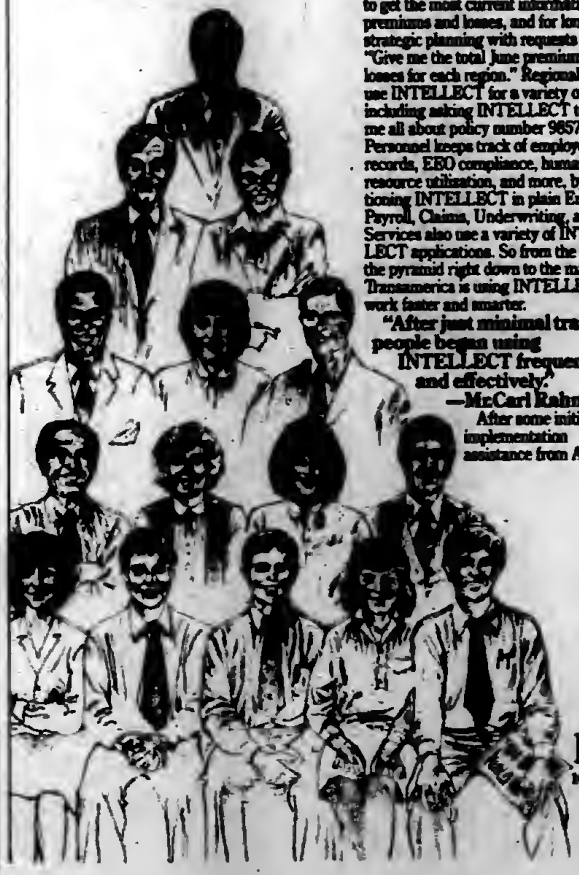

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NEWS

WORLD DIGEST

TOKYO — IBM Japan has reportedly halted production of its JX, the Japanese version of the IBM PCjr, because of a slump in orders here. IBM began shipments of the JX in November, targeting business and home users. The machine is produced locally by Matsushita Electric Industrial Co. NEC Corp.'s PC-9801 is way out in front in the low-end microcomputer market here, which partially accounts for the JX's limited success, analysts reported. Furthermore, the demand for microcomputers for home use is almost satisfied in Japan, analysts said.

BRISBANE, Australia — Queensland residents have shown little interest in electronic funds transfer cards. A survey conducted by the Queensland Institute of Technology indicated that a massive education campaign will be needed before large-scale introduction of the technology is feasible. Two-thirds of the people polled said they would not use EFT facilities, and more than half were negative toward the whole concept of EFT at point-of-sale terminals. Among those who expressed some interest, 61% said they would not be willing to pay a transaction fee for the facility. In general, the public showed a low awareness of technology; just 30% of those surveyed had heard of EFT.

AMSTERDAM — The Dutch Advertising Ruling Committee found the Victor Vickey to be noncompatible with IBM. The Victor portable personal computer was being offered by Dutch importer LCI Computer, which advertised the system as compatible with the IBM Personal Computer. The Committee ruled otherwise after it was requested to authenticate the company's claim of compatibility.

BEIJING — More than $1.5 million worth of Perkin-Elmer Corp. equipment was installed here recently. In May, China National Oil and Gas Engineering Development Corp. installed two PE 3230 minicomputers and a 3205 system on its Shanghai oil rigs.

A month earlier, the Central Iron and Steel Research Center here installed a PE 3252 XP, a 3205 and two 7350A minicomputers.

MELBOURNE, Australia — The National Australia Bank has ordered $62 million worth of new IBM equipment, including three mainframes and an automatic teller machine (ATM) network for self-service banking. The order calls for three 3090 Model 200 series mainframes and upgrades for its IBM 400 series units, disk systems and peripherals, as well as about 1,400 finance and general-purpose terminals and 200 ATMs. Other equipment on order includes a 3890 series reader/sorter, about 500 IBM 3270-type terminals, approximately 300 IBM 5922 series document readers, a number of 3725 communications controllers and upgrades to existing 4700 series controllers. The order does not include software, on which the bank spends about $8 million annually, a spokesman said.

MUNICH — In a major coup for Siemens AG here, Messerschmitt-Boelkow-Blohm (MBB) GmbH, a military equipment manufacturer, has decided on two jumbos from Siemens' 7890 S line. Pricing on the Siemens equipment, manufactured by Fujitsu Ltd., was the deciding factor, according to a spokesman.

The contract with MBB mirrors recent events at other major German firms: Bayerischen Motoren Werke AG and the German car association Adac GmbH both chose Siemens over IBM equipment.

TOKYO — AT&T International and Ricoh Co. will form a joint venture company called AT&T Ricoh Co. to market selected AT&T office automation and telephone products in Japan.

Under the terms of the agreement, AT&T will own 51% of the new company, and Ricoh will own 49%. The company will reportedly start doing business on Sept. 1. Ricoh currently supplies facsimile equipment to AT&T Information Systems in the U.S.

BRISBANE, Australia — Queensland secondary schools will move computer studies away from the hardware-/software emphasis of the 1970s with a brave new syllabus designed for the 1990s.

A curriculum to be introduced in January will introduce fourth- and fifth-generation languages, knowledge engineering and the practical application of fourth-generation languages. A microcomputer-based implementation of IBM's relational data base language SQL will be used for the program by Queensland Information Technology, sources said.

An intensive training program has overcome the problem of finding teachers able to handle the course material.

MELBOURNE, Australia — Software developer BBJ had a successful trip to the National Computer Conference held last month in Chicago.

It clinched a $150,000 sale of its application software to a Canadian mining company, and signed up a Scandinavian distributor for its Today software, an AT&T Unix-based program generator.

BBJ's booth was set up by the company's U.S. subsidiary because managing director Ken Begbie opted not to participate in the national stand organised by the Australian Federal Department of Trade.

Products on display included Today and a range of packages for Hewlett-Packard Co.'s HP 3000 line of computers.

MELBOURNE, Australia — A cost-benefit analysis has convinced a Victoria, Australia, insurance company that it should drop a 10-year-old outside service bureau contract and start processing in-house. The move will call for about $1.3 million worth of computer equipment, a computer room and 12 new staff members at Vacc Insurance Ltd. The firm has an 8M-byte Facom M360R with 5G bytes of disk storage, three tape drives and a laser printer from Fujitsu Ltd.

SYDNEY, Australia — With sales of $29.5 million during the first half of 1985, Prime Computer of Australia Ltd. has recorded its strongest first-half growth to date. Product revenue for the second quarter was $12.6 million, up 60% from the same period last year. In 1984, Prime's Australian revenues totaled $40.6 million. The firm expects 1985 revenues to reach $60 million.

NEC wraps Geisco services into its Japanese NEC-Net

ROCKVILLE, Md. — General Electric Information Services Co. (Geisco) said last week it signed an agreement with NEC Corp. of Japan that will make NEC Geisco's primary distributor of its worldwide teleprocessing services in Japan by interconnecting with NEC's new value-added Japanese network — called NEC-Net.

Geisco said NEC will offer its clients access to international teleprocessing applications — such as international order entry, cash management and electronic mail.

Geisco and NEC have also agreed to set up a joint venture company called C & C International Ltd., which will provide marketing and technical support for Geisco's services in Japan.

Geisco is a wholly owned subsidiary of General Electric Co.

Sicob scheduled for September in Paris

PARIS — The 36th Salon International D'Informatique, Telematique, Communication, Organisation du Bureau et Bureautique (Sicob) conference and exhibition will be held from Sept. 18-27 in the Cnit exhibition center, Paris la Defense. The show is geared to data processing professionals, including manufacturers, computer engineering firms, DP managers, systems engineers and analysts.

The general theme of the event is "Data Processing: Opportunities and Drawbacks." Seminars scheduled within the framework of Sicob include "Convention Informatique" (Sept. 16-20, Palais des Congres), "Infodial-Videotex" (Sept. 16-20, Palais des Congres) and "Sicob Study and Application Days" (Sept. 18-27, Cnit).

The registration fee is approximately $4 or by invitation.

More information is available from Sicob, 4 Place de Valois, 75001 Paris, France.

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NEWS

Net meet set for Sept. 16

SAN FRANCISCO — "Fiber Optic Communications and Local-Area Network Exposition," sponsored by Information Gatekeepers, Inc. is scheduled for Sept. 16-20 at Brooks Hall here.

The exposition is geared to communications managers who purchase, design, evaluate or recommend any type of fiber-optic or local-area network, according to the sponsor.

The conference will begin with in-depth one-day or half-day seminars scheduled on Monday and Tuesday. Topics include case studies from a number of industries. Other topics consist of the fiber-optic market, system design and sensors.

On Wednesday, exhibits will be shown, and there will be a number of shorter sessions addressing topics such as single-mode technology, fiber-optic passive components and fiber-optic sensors, Information Gatekeepers said.

Fees for the three days of exhibits and sessions range from $100 to $250.

The half-day tutorials cost $200.

Full-day course fees range from $395 to $495.

Information Gatekeepers is located at 214 Harvard Ave., Boston, Mass. 02134.

Datastorage '85 targeted at executives

SAN JOSE, Calif. — Datastorage '85 — the fourth annual international Datastorage forum — will convene Sept. 16-18 at the Red Lion Inn here to address critical industry issues and areas of change in data storage equipment and applications.

The forum is designed for executives who set the strategic directions of their companies. This year's conference will explore the role of the subsystem, rigid disk media trends, ¼-in. tape cartridges in the OEM market, new directions for ¼-in. tape drives, readiness of optical storage products and personal computer data storage requirements.

The registration fee is $925. Information is available from Forum Management, Cartlidge & Associates, Inc., Suite M259, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

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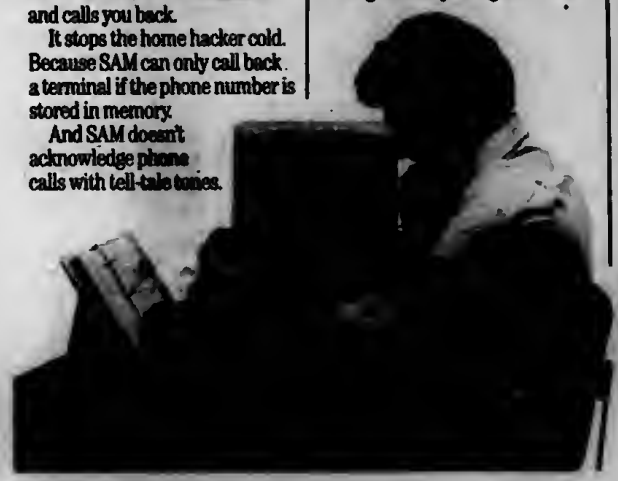

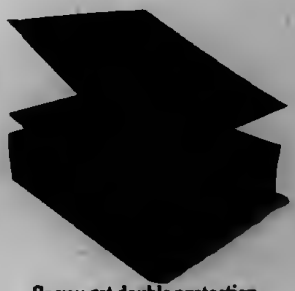

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System beefs up surgical instrument maker's operations

ST. LOUIS — A surgical instrument manufacturer here that cut over from batch processing to an on-line, closed-loop system has reduced its inventory and delivery times and added to its understanding of customers' needs.

Storz Instrument Co., which makes microinstruments, used for eye and ear surgery, along with other medical devices, logs sales of more than $50 million a year. Each day, it ships more than 600 customer orders that represent approximately 1,500 items.

The firm's management depends heavily on its manufacturing software system, NCR Corp.'s Manufacturing Information Support System Integrated On-Line (Mission) to keep track of orders, inventories and shipments in order to gauge customers' needs. The software draws on marketing forecasts to schedule production; it then reports sales bookings, which the firm uses to update its forecasts.

"The closed loop . . . begins with customer demand and closes with revision of our perception of customer demand," said James E. Brands, Storz's senior vice-president of finance and administration.

Storz runs 10 modules of the Mission software — master production scheduling, order processing, inventory management, bill of materials, materials management, routing, costing, material requirements planning, purchasing and receiving — on a 4Mbyte NCR 8575M mainframe. The software interfaces with homegrown sales, marketing and forecasting programs.

Other business software — financial systems and the like — run on the mainframe, but Brands said the manufacturing system is more central to the firm's operations.

'No. 1 objective'

"It's obvious that a company of this size and complexity must have computerized systems for sales, bookkeeping and so forth. We couldn't operate even poorly without them today," he said. "But the most significant thing we get from data processing is not record keeping or accounting. It is the ability to maximize the extent to which we satisfy customer demands. And this is our No. 1 objective."

Storz brought up most of its software modules in July 1983 to replace a largely batch processing system. The system had provided some on-line inquiry, but employees could only access day-old data that had been processed overnight.

Employees have on-line access to the system; through any one of about 80 VDT terminals, a worker can enter data and inquire about the status of customer orders anytime between 7:15 a.m. and 5:30 p.m. "We're working with much more detailed, timely and accurate information than we ever had before," Brands said.

Two Storz divisions use the manufacturing system: the instrument division, which makes hand-held surgical instruments; and the equipment division, which makes larger products such as ultrasound devices. The equipment division has had its operations on the system longer and has logged some substantial results. In one year, the division has done the following:

- Cut its inventory by 23% and its inventory carrying costs by 20%.
- Brought back-orders to their lowest level in the firm's history.
- Decreased its number of production line shutdowns caused by inventory shortages.
- Cut its customer order turnaround time in half.

According to Storz' MIS director, Carl W. Riebeling Jr., both the equipment and instrument divisions have gotten less-specific benefits as well.

"Although people are still getting educated in the new ways, they can already see many intangible benefits from the availability of better information across the company and from a common data base," he said. "For instance, manufacturing and marketing now work with the same facts, and information is readily available for customers via 10 customer service representatives at video terminals."

Riebeling said Storz is still developing and refining its manufacturing system and will continue to change the software as business dictates.

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Wang users schedule meet

BOSTON — The Wang Users Society of America is sponsoring Index '85, the first independent exposition for users of Wang Laboratories, Inc. equipment. The show will be held Sept. 30 to Oct. 2 at the Park Plaza Castle here.

The show will feature vendors of Wang-compatible hardware, software and services and will be held concurrently with the International Society of Wang Users meeting sponsored by Wang at Boston's Marriott at Copley Place.

Admission to Index '85 is $25.

More information is available from Independent Expositions, Inc., 786 Rockrimmon Road, Stamford, Conn. 06903.

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NEWS

CALL FOR PAPERS

SECURICOM '86: 4TH WORLDWIDE CONGRESS ON COMPUTER AND COMMUNICATIONS SECURITY AND PROTECTION
Cannes, France, March 5-7

Papers are now being sought for this fourth worldwide congress. Topics include but are not limited to the following: electronic banking security including electronic funds transfer, authentification, identification, cryptography, point of sale and key management; network security including transborder data flow; security implications of new media including videotex, facsimile and Integrated Services Digital Network; security within microcomputers and distributed systems; juridical aspects of computer security; computer security as a management function; and DP incidents.

Send five copies of the paper to Securicom-Sedep, 8 rue de la Michodiere, 75002 Paris, France.

THE ELEVENTH ANNUAL SAS USERS GROUP INTERNATIONAL CONFERENCE
Atlanta, Feb. 9-12

A call for papers has been issued for this annual international conference. Authors are invited to submit papers on the following topics: capacity planning and evaluation, systems software, econometrics, time series and operations research, education and consulting, graphics, information centers, macro facility, microcomputers, posters and statistics.

Papers/posters must be postmarked no later than Sept. 1. Two copies each of a 200-word abstract and a working draft are also required by Sept. 1. Forms for submitting abstracts may be obtained by contacting SAS Institute, Inc., Box 8000, SAS Circle, Cary, N.C. 27511.

THE SIXTH INTERNATIONAL CONFERENCE ON DECISION SUPPORT SYSTEMS
Washington, D.C., April

Papers for presentation at this Sixth International Conference on decision support systems (DSS) are being sought. Topics include builders of DSS and expert systems used for decision support; managers, executives and others who use DSS; researchers in the technical, behavioral and managerial aspects of DSS; vendors of DSS products and services; information systems managers/information center managers who are responsible for or are affected by DSS in their organizations.

Three copies of the formal paper or paper summary should be submitted no later than Sept. 16 to Prof. Jane Fedorowicz, School of Management, Boston University, 704 Commonwealth Ave., Boston, Mass. 02215. Questions relating to papers, presentations and panels may be addressed to Jane Fedorowicz or to Vincent Barraba, Eastman Kodak Co., 343 State St., Rochester, N.Y. 14650.

THE EIGHTH INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION
Paris, Oct. 28-31

A call for papers has been issued for this international conference being held in Paris. The official language of the conference is English. Papers are being sought on the following topics: data classification; clustering algorithms; signal and image processing; pattern analysis; feature recognition; pattern directed interface; inductive learning; modeling of human perception; image understanding and recognition; speech understanding and recognition; computer vision; expert systems in pattern recognition; specialized architectures; very large-scale integration for pattern recognition; industrial applications; robotics; biomedical pattern recognition; remote sensing; office automation pattern recognition; and text understanding and verification.

Prospective authors should submit four copies of a draft of a full-length paper or a 250-word abstract for poster sessions to: Afcet ICPR Secretariat, 156 Boulevard Pereire, 75017 Paris, France. The deadline for submission of abstracts or poster sessions is Dec. 2.

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DBMS pumps up pacemaker company's tracking system

MINNEAPOLIS — The department that tracks clinical studies of pacemakers and other medical devices for a manufacturer here cut its staff size and more than doubled its work load after it replaced a homegrown, hierarchical data base management system with a packaged, relational one.

Medtronic, Inc.'s 14-member clinical evaluation staff currently monitors about 34 studies a year; in 1982, the staff — with 16 employees — handled 15 studies annually. The studies track human implants of pacemakers and other devices so Medtronic can meet Food and Drug Administration (FDA) requirements and determine whether it should market given products.

Improvements in the staff's productivity came largely from a relational system, Sir, Inc.'s SIR/DBMS, that Medtronic brought up during the spring of 1982, according to Tim Church, manager of biometry for the firm. With the DBMS, for example, staff members can pull together in as little as three weeks' time FDA reports that once took up to two months.

Two major drawbacks

The system runs on an 8M-byte Prime Computer, Inc. Prime 750, and staff members access data through nine Vector Graphic, Inc. personal computers, one Compaq Computer Corp. portable micro and two Televideo Systems, Inc. terminals. SIR/DBMS replaced a hierarchical system called Medque that had been developed in-house during the late 1970s. According to Church, the old DBMS had two major drawbacks: inflexibility and a limited reporting capability.

Inflexibility. Medque supported only two levels of data structure, and its inflexibility imposed strong restraints on the clinical evaluation staff. For each device implant, the system supported one record of the initial implant and a set number of follow-up files that staff members established at the beginning of the study.

"If the scope of a study changed in the middle and we needed more space than we allocated," Church said, "it meant stopping the project to redefine all of the files, unloading the data already entered and reloading it into the new files." The process delayed studies and taxed Medtronic's one full-time programmer and his part-time assistant.

Besides impeding the collection of data from the studies, Medque's structure hampered efforts to manage the studies themselves. Administrative details, such the names of participants and indicators of progress, had to be entered on the implant record with clinical data.

This approach cluttered the implant record; it also blocked staff members' efforts to get at data they needed. "We had no way of isolating the administrative data so we could really use it to keep track of our studies," Church said.

Limited reporting capability. Medque's structure led directly to this second drawback. Church said nontechnical users could easily generate reports that the system's two-level hierarchy supported, for example, a tally that counted instances of a given occurrence. Only experienced programmers, however, had the wherewithal to work around the structural constraints and develop more complex reports.

"Our limited programming staff could not keep up with the demand for data," Church said. "Far too much of [its] time was being spent accessing data and performing analytical tasks for other, less technical users."

The relational DBMS that Medtronic now uses has helped the firm overcome both problems.

According to Church, SIR/DBMS gives the clinical evaluation staff the flexibility it needs to do its work. The staff sets up separate data bases for administrative and clinical information. Because of this, he said, "we have much better administrative control of our studies, and our study data bases are now completely dedicated to the collection and analysis of study data."

Medtronic's evaluation staff can also organize data bases differently according to the nature of the information they contain. "[The DBMS] allows us to use the natural structure of our data — whatever that structure may be — to its best advantage," Church said. Medtronic uses a network data model for its administrative data base, for example, and a hierarchical model for most of its study data bases.

The DBMS also offers a range of features that help researchers put together reports on administrative and clinical data.

- A query and retrieval language, based on IBM's SQL, allows nontechnical users to put together simple ad hoc reports — lists and summaries, for example. Church said most of the evaluation staff members use this feature, and all of them will eventually learn it.
- A report definition language lets technical users set up complex reports. The language sorts and groups data; produces titles, column headings, totals and subtotals; and formats final reports. Programmers use it to set up menus that will call information from the data base.

COMPAQ could have stopped here

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Medtronic's programmers use this feature to set up standard reports that evaluation staff members can call for again and again. Staff members work through menus to select standard formats and generate printed reports. Once a user selects a format, Church said, he can generate a report within a half hour.

■ A simplified report generator, which relies on defaults for some of its logic, offers many of the same abilities as the report definition language. At Medtronic, programmers use it to format relatively complex ad hoc reports.

■ SIR/DBMS' organization supports Medtronic's various data structures and provides for easier logical reporting than Medquo did.

According to Church, the ability of staff members to produce accurate reports is a critical factor in Medtronic's business.

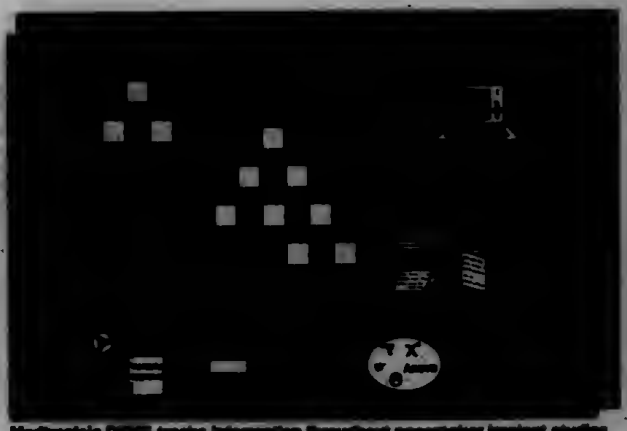
"The more efficiently we can produce the various regulatory reports and approval applications required by the FDA," he explained, "the more quickly we can bring our products to market."

Resource shortage limits productivity

Staff members' productivity, however, has been somewhat limited because of a shortage of system resources.

The clinical evaluation staff shares the Prime 750 with Medtronic's accounting staff, and the machine is frequently overloaded, according to Church.

In the future, the firm plans to buy a dedicated minicomputer to run both the DBMS and a statistical software package that the evaluation staff uses.



Medtronic's DBMS tracks information throughout pacemaker implant studies.

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Medtronic, Inc.'s clinical evaluation staff uses Sir, Inc.'s SIR/DBMS most extensively to manage the human implant studies it conducts. Studies begin after the Food and Drug Administration (FDA) approves them and continue until Medtronic feels the product being tested is ready for marketing.

By the time the company gets permission to begin an implant study, the clinical evaluation staff has entered preliminary information about it into an administrative data base on Medtronic's Prime Computer, Inc. Prime 750.

The next step in the process is to develop a data entry form that doctors in the field will fill in with relevant information about an implant and set up the study data base.

Evaluation staff members design a data entry form for the study with RJBForms, a homegrown microcomputer software package. RJBForms uses the format of the data entry forms to generate both a data entry program and a data dictionary.

Once the data entry forms are designed, they and the devices involved in the test are shipped out to participating doctors. As the doctors collect information, they record it on the forms and send the forms back to Medtronic. At the firm, clinical aides review the forms for completeness and accuracy and enter information from them into a microcomputer.

An automatic upload program takes the flat Ascii files from the microcomputer, uploads them to the Prime machine and loads the data into the study data base that RJBForms set up earlier. At this point, SIR/DBMS generates and prints an error report.

Throughout the study, the data base management system prints out a variety of reports, including biweekly update reports that show upper management what studies are in progress and annual regulatory reports that the FDA requires.

From the study data base, clinical evaluation staff members also create analysis data bases in which they run statistical analyses on study data using BMDP Statistical Software, Inc.'s BMDP, statistical software developed by the University of California.

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TURNAROUND TIME

Larry Long

Q *Six months ago, I hired a new director of information systems. He took over a difficult situation and has been doing very well. The steering committee has approved all of his recommendations to date, but all of us were taken by surprise when he proposed doubling his budget during the next three years, from $6 million to $8 million. He stated that this increase is needed to bring us up to parity with our peer companies.*

We are seriously considering approving most, if not all, of the proposed increase.

But before doing so, we would like to know if other companies are making similar commitments in an attempt to catch up.

In truth, relatively few companies have adopted the giant-leap strategy in an attempt to become state-of-the-art users of computer technology — but more should. If you are way behind now, you can't catch up gradually.

Half of all MIS departments are grossly underfunded. That is, if MIS funding were doubled in these departments, the net result would be a positive contribution to the organization's bottom line. These companies, of which yours may be one, are not taking full advantage of the potential of computers.

Of course, good MIS management is a necessary prerequisite. If your new manager has a well-conceived long-range plan, and you remain confident in his abilities, go for it.

Q *I would like your evaluation of my present situation. My data processing career began seven years ago.*

I worked for a local government for 4½ years as a programmer/analyst and in industry for two years as a software engineer. The company I was working for had financial difficulties and laid off 25% (50 people) of its staff, including me.

I then accepted what at the time seemed to be a reasonable position, only to find that the DP shop consisted of entry-level programmers. Also, management was deeply involved in a religious sect — my religious preference was asked of me during my interview.

My job involved upgrading the current software to a new system that was purchased from my previous employer.

I had considerable experience with this system. I received a good six-month review, completed the project at 6½ months, and was informed at seven months that my services were no longer needed.

I described this sequence of events during several local interviews and was informed that, "What you're telling us isn't new — they are people like that all the time."

I am currently considering leaving the computer field altogether and would appreciate your views on the following questions: Is this what the data processing industry has to offer — a use-the-people-and-throw-them-away concern for the bottom line? How can a prospective employee obtain an objective evaluation of a company's relationship with its employees?

There is no question in my mind that your previous employer took advantage of you.

However, this unfortunate event is in no way indicative of the DP industry. Harsh, uncaring and even religiously motivated personnel decisions are made in every discipline.

Typical interviewees make two basic mistakes, thereby reducing their chances of an objective evaluation of the company.

First, interviewees don't do their homework; that is, they don't learn about the company's product line, its profit posture over the last five years, its management style and so on.

This type of information can be obtained from annual reports and other publically available information.

Next, the interviewee is too often content to engage in small talk, never asking the hard questions that will render insight into the employer/employee relationship.

When you interview, ask about turnover, potential for promotion, educational support, morale and so on.

When an interviewer sidesteps such questions, this should speak volumes to you.

Q *I've been an applications programmer since graduation from college 3½ years ago. I have no complaints about my employer or supervisor, but I am having second thoughts about a career in programming.*

I'm reasonably good at it and don't have anything else in mind, but I sometimes wonder if I have the temperament for it. What makes a good programmer?

A good programmer is perceptive, patient, persistent, picky and productive.

These are my five "Ps" of programming. If you are substantially lacking in any one of these areas, perhaps you should consider a career change.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.

CICS Outages Are A Royal Pain!

NEWS

MANAGERS ON THE MOVE

MICHAEL F. MYERS has been promoted to director of systems development in the data processing department of Lincoln National Corp.

Prior to joining the company, Myers spent 12 years with the U.S. Marine Corps serving as a programmer and systems analyst.

Myers, who joined the company in 1980 as a project manager in data processing development, provides project and resource planning, direction and control to the DP development team responsible for the support of Lincoln National's individual products division.

A graduate of the University of Maryland at College Park, Myers holds a bachelor's degree in psychology.

Lincoln National provides life and health insurance and annuities, property and casualty insurance and related financial services.

■

JOHN J. CAHILL has been appointed vice-president of management information systems for Intercontinental Hotels Corp.

In this position he will be responsible for the MIS function at Intercontinental Hotels, coordinating and implementing short- and long-term planning for systems development, computer processing and telecommunications at the hotel, division and corporate levels.

Cahill has had a long career with ITT and Sheraton Corp., where he was most recently director of hotel computer systems.

He is a graduate of Manhattan College in New York.

■

JOSEPH LACKO has been appointed corporate vice-president of information services for Supermarkets General Corp. in Woodbridge, N.J.

Lacko has been with the company since 1970, beginning his career as a senior systems analyst and was subsequently elevated to a project manager in 1972. in 1975, he was promoted to manager of the information systems development department.

Most recently, he held the position of director for the information service department.

He holds a bachelor of science degree in Business Administration from Seton Hall University, South Orange, N.J., and a certificate of data processing from Rutgers University in New Brunswick, N.J.

■

GARY A. REDDIG has been appointed director of forces management for Eaton Corp.'s Information Management Systems Division.

Reddig joins the division after 20 years of military service in which he was involved in areas related to the Information Management Systems Division activities, including readiness and contingency operations functions; executive management of communications and electronics; airborne command and control systems; and management of automated telephone and telecommunications software development and analysis.

Reddig has a B.S. in mathematics and a B.A. in psychology from North Dakota State University in Fargo. He also has an M.A. in human relations from the University of Oklahoma in Norman.

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AT&T, IBM eyed

NEW YORK — The Eastern Management Group is conducting a conference titled "AT&T & IBM: New Directions in Technology," at the Plaza Hotel here Sept. 11-12.

Speakers will include Archie McGill, president of Rothschild Ventures, Inc.; Dixon Doll, president of DMW Group, Inc.; John Malone, president of the Eastern Management Group; Ulrich Weil of Morgan Stanley & Co.; and John S. Bain of Shearson Lehman Brothers, Inc.

Among issues to be addressed are IBM's need to capitalize on its Rolm Corp. acquisition to establish network and systems management control, the impact on IBM of AT&T's private branch exchange base in Fortune 500 organizations, how AT&T's marketing naivete is limiting its growth in local-area network and computer equipment sales and to what extent a surge in merger activity will begin a pricing revolution.

The conference will also address whether IBM will continue to make acquisitions in the communications area and whether IBM's activity in the area will spur changes in switching architecture.

The conference registration fee is $795.

More information about the conference can be obtained from the Eastern Management Group, which is located at Four Century Drive, Parsippany, N.J. 07054.

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NEWS

CALENDAR

WEEK OF SEPT. 8

SEPTEMBER 9-11, CAMBRIDGE, MASS. — 1985 Society of Manufacturing Engineers (SME) World Congress on the Human Aspects of Automation. Contact: SME, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

SEPTEMBER 8-12, BOSTON — Managing the Explosion: End-User Computing and Emerging Technologies. Contact: Kimberly Gandia, Society for Information Management, Suite 600, 111 E. Wacker Drive, Chicago, Ill. 60601.

SEPTEMBER 9, NEW YORK — CICS/VS Application Programming — Macro Level. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 9-13 in San Antonio and Sept. 11 and 13 in New York.

SEPTEMBER 9-10, ATLANTA — Principles of Prototyping. Contact: Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138. Also being held Sept. 12-13 in Fort Worth, Texas.

SEPTEMBER 9-11, VANCOUVER, B.C. — International Communications and Computer Exhibition. Contact: Tracon Exhibitions, 202-595 W. 10th Ave., Vancouver, B.C., Canada V6Z 1K9.

SEPTEMBER 9-11, WASHINGTON, D.C. — The Data Entry Management Association's (Dema) Ninth Annual Data Entry Management Conference & Exhibition. Contact: Marilyn S. Bedek, Dema, P.O. Box 16711, Stamford, Conn. 06905.

SEPTEMBER 9-11, WASHINGTON, D.C. — Federal Computer Conference. Contact: Federal Computer Conference, P.O. Box N, Wayland, Mass. 01778.

SEPTEMBER 9-13, FORT LEE, N.J. — Vtam: From Start to Finish. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 16-19 in San Antonio and San Francisco, Sept. 23-26 in Chicago and Sept. 30 to Oct. 3 in Los Angeles.

SEPTEMBER 9-12, LOS ANGELES — CICS/VS MRO/IRC. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 9-12 in Washington, D.C., Sept. 23-26 in Boston and Sept. 30 to Oct. 3 in Fort Lee.

SEPTEMBER 9-12, MONTREAL — First International Conference on Computer-Aided Technologies. Contact: Stephen J. Leahey, P.O. Box 577, Desjardins Postal Station, Montreal, Que., Canada H5B 1B7.

SEPTEMBER 9-12, SAN ANTONIO — CICS/VS Application Design. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 16-19 in Fort Lee and Los Angeles and Sept. 23-26 in Washington, D.C.

SEPTEMBER 9-13, ATLANTA — CICS/VS Internals. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 9-13 in Boston and San Francisco, Sept. 23-27 in Fort Lee and San Antonio and Sept. 30 to Oct. 4 in Los Angeles and Washington, D.C.

SEPTEMBER 9-13, CHICAGO — CICS/VS Application Programming — Command Level. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 9-13 in Fort Lee and Los Angeles, Sept. 16-20 in San Antonio and Washington, D.C., and Sept. 30 to Oct. 4 in Boston and Denver.

SEPTEMBER 9-13, CHICAGO — Structured Analysis and Design Techniques Workshop. Contact: Elise Rabelais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

SEPTEMBER 9-13, HOUSTON — Data Base Development Workshop. Contact: Elise Rabelais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

SEPTEMBER 9-13, TORONTO — Basic Systems

See SEPT. page 41

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Analysis. Contact: Thomas J. Bisacquino, Association for Systems Management, 24587 Bagley Road, Cleveland, Ohio 44138. Also being held Sept. 23-27 in Kansas City, Mo.

SEPTEMBER 8-13, WHISTLER MOUNTAIN, B.C. — The Ninth Data Communications Symposium. Contact: William Lidinsky, Bell Laboratories, Room 6B300, Naperville-Wheaton Road, Naperville, Ill. 60566.

SEPTEMBER 10, NEW YORK — Vmem: Its Structure and How to Use It. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 12 in New York, Sept. 16-19 in Boston and Chicago, and Sept. 23-26 in Atlanta.

SEPTEMBER 10-13, MELBOURNE, AUSTRALIA — The First Pan Pacific Computer Conference. Contact: The Australian Computer Society, P.O. Box 212, Hampton, Vic. 3188, Australia.

SEPTEMBER 11-12, DALLAS — Data Base Administration and Data Resource Development. Contact: Software Institute of America, Inc., 8 Windsor St., Andover, Mass. 01810.

SEPTEMBER 11-13, SAN FRANCISCO — ISDN User Needs vs. Vendor Capabilities ... Is There a Match? Contact: Probe Research, Inc., P.O. Box 590, Morristown, N.J. 07960.

SEPTEMBER 11-13, SAN FRANCISCO — Testing Computer Software. Contact: U.S. Professional Development Institute, 1620 Elton Road, Silver Spring, Md. 20903.

SEPTEMBER 12-13, MCLEAN, VA. — Federal ADP and Telecommunications Procurement. Contact: International Data Corp., Washington Division, Suite 240, 1500 Planning Research Drive, McLean, Va. 22102. Also being held Sept. 19-20 in Norfolk, Va.

SEPTEMBER 12-13, SAN FRANCISCO — IBM vs. AT&T — Local Network Strategic Issues. Contact: Architecture Technology Corp., P.O. Box 24344, Minneapolis, Minn. 55424.

SEPTEMBER 12-13, NEW YORK — Crisis '85: Bypass. Contact: The Eastern Management Group, Four Century Drive, Parsippany, N.J. 07054.

SEPTEMBER 12-13, NEW YORK — Micro-Mainframe Links. Contact: Software Institute of America, Inc., 9 Windsor St., Andover, Mass. 01810.

SEPTEMBER 12-13, SAN FRANCISCO — Data Processing Alternatives for Independent Banks: Service Bureau vs. In-House Systems. Contact: Alice Gibons, Inter Financial Association, 21 Tamal Vista Blvd., Corte Madera, Calif. 94925. Also being held Sept. 19-20 in Los Angeles.

WEEK OF SEPT. 15

SEPTEMBER 16-17, ATLANTA — CICS/VS Performance and Tuning. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

SEPTEMBER 16-18, SAN FRANCISCO — Computers in Finance. Contact: California Datamart, Showplace Sq., San Francisco, Calif. 94103.

SEPTEMBER 16-18, SAN JOSE, CALIF. — Datastorage '85: An International Forum. Contact: Cartridge & Associates, Inc., Suite M-260, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

SEPTEMBER 18-19, LOS ANGELES — CICS/VS Logic and Debugging. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024. Also being held Sept. 16-19 in New York.

SEPTEMBER 16-20, CHARLOTTE, N.C. — Vmem for Practitioners. Contact: American Data Group, Inc., 3665 Woodbury Drive, Duluth, Ga. 30136.

SEPTEMBER 16-20, MCLEAN, VA. — Knowledge Engineering 1: Acquiring the Expert's Knowledge. Contact: Expert Knowledge Systems, Inc., 6313 Old Chesterbrook Road, McLean, Va. 22101.

SEPTEMBER 16-20, SAN FRANCISCO — Analysts' Skills Workshop. Contact: Elias Rabaiais, Learmonth & Burchett Management Systems, Inc., Suite 405, 2800 N. Loop W., Houston, Texas 77092.

SEPTEMBER 16-20, SAN FRANCISCO — Fiber-Optic Communications and Local-Area Networks Exposition. Contact: Information Gatekeepers, Inc., 214 Harvard Ave., Boston, Mass. 02134.

SEPTEMBER 17-18, SAN FRANCISCO — Computers in Finance — Datamart. Contact: Alice Gibons, Inter Financial Association, 21 Tamal Vista Blvd., Corte Madera, Calif. 94925.

SEPTEMBER 17-19, DALLAS — 1985 Software/Expo. Contact: Software/Expo, Suite 205, 2400 E. Devon Ave., Des Plaines, Ill. 60018.

SEPTEMBER 18-19, ATLANTA — Recovery/Restart. Contact: On-Line Software International, Inc., Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

SEPTEMBER 18-20, LAS VEGAS — American Production and Inventory Control Society's Fall Seminar. Contact: American Production and Inventory Control Society, Inc., 500 W. Annandale Road, Falls Church, Va. 22046.

SEPTEMBER 18-20, LOS ANGELES — Financial Information Systems: The New Generation. Contact: National Institute for Management Research Seminars, P.O. Box 3727, Santa Monica, Calif. 90403.

SEPTEMBER 18-27, PARIS — Sicob. Contact: Sicob Press Service, 4 Place de Valois, 75001 Paris, France.

SEPTEMBER 21-22, PALO ALTO, CALIF. — Seventh Annual Perth Convention & Banquet. Contact: Perth Interest Group, P.O. Box 8231, San Jose, Calif. 95155.

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EDITORIAL

A pioneer remembered

In the annals of computer history, IBM's Philip Donald Estridge will be counted in that topmost tier of individuals who, through a combination of personal brilliance and fate, strongly influenced not only their businesses but also the times in which they lived.

For it can be said that Estridge, killed 10 days ago in a plane crash, did more to institutionalize the microcomputer as a standard business tool than any other person to date. Not only did he, thereby, help to give birth overnight to a multibillion dollar industry, but he also substantially helped change the way corporate America conducts its business.

On the surface, Estridge was an unlikely individual to launch a division at IBM. His free-wheeling management style and relative availability to the business and trade press rankled some of his more dyed-in-the-blue-wool counterparts, a style clash that was widely reported to have been a factor in Estridge's transfer earlier this year from the Entry Systems Division to a position with broader corporate responsibilities.

Given enough rope, with which lesser executives might have hanged themselves, Estridge began writing his own rules that would take ESD from a thought in mid-1980 to a $5 billion operation five years later. Although ESD did not design the most functional, powerful or least expensive machine on the market, it did produce a Personal Computer built with off-the-shelf parts — which was largely unheard of in Armonk, N.Y. — and thus gave IBM's Personal Computer assemblers adequate supplies of key components, often from multiple vendors.

As one IBM sales executive said recently, "The Personal Computer has changed the way IBM does business, and we're still learning our lessons from it."

The success of the machine, and of Estridge's strategy, was unlike anything the industry had ever seen.

The same can be said for the still-evolving changes the microcomputer revolution spurred in the data processing shop, where legions of end users are forever changing the nature of the MIS function.

Applause for Amiga

Before the debut of Commodore Business Machines, Inc.'s Amiga personal computer recedes too far in the distance, we want to commend the company for its determination to innovate with personal computer technology — especially in the area of ease of use. Although the Amiga microcomputer currently has serious, perhaps lethal, operating system limitations, it is nonetheless a true engineering breakthrough.

Given a more perfect marketing environment and the resources to work out its technical problems, the Amiga could be a wildly popular business machine. As it is, Amiga will probably survive, if at all, as an entertainment machine.

Whatever the machine's fate, the Amiga's advances in graphics capabilities, system speed, sound reproduction and multitasking functions deserve the attention of conscientious corporate computer management professionals.

Such advances are rare in these times of clones upon clones and should be investigated, applauded and encouraged.

'So, nobody's perfect.'

LETTERS

Tenants overlooked in shared services

The articles "Demand Low For Smart Buildings" and "Smart Buildings Hold Little Or No Interest For Tenants" (CW, June 17) accurately reflect the puzzling state of the shared tenant services industry.

In the rush to embrace new telecommunications and information technology and in the euphoria over deals between developers and providers, a key party has been ignored — the tenant. No one, it seems, is looking after the tenant's needs. It's no wonder interest in shared services is so low.

The solution to this puzzle rests in the hands of the developer and the shared service provider. To date, these parties have approached each other as if their interests were dissimilar.

Developers want to limit their involvement. Shared service providers support this position on the mistaken premise that limited developer involvement best serves their long-term profit interests.

Tenant demand and interest for shared services will increase only when developers and service providers can build a relationship on common interest. Meeting tenant needs is the bridge.

Charles B. Coe
Atlanta

***Computerworld** welcomes letters from its readers. Preference will be given to typed, double-spaced letters of 150 words or fewer. Letters may be edited for the purposes of clarity and brevity. Letters should be addressed to Editor, Computerworld, Box 880, 375 Cochituate Road, Framingham, Mass. 01701.*

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VIEWPOINT

The semantics of small computer systems

LECHT ON SCIENCE
Charles P. Lecht

Just in case you think this is an easy subject to tackle, try doing it yourself. I've tried to write this piece at least 15 times over the past three years, but I never got very far. I was unable to define what I, or anyone else for that matter, meant by a "small" system.

My hang-up was that I was trying to find some connection between the word "small" and the system's physical size, its power and its cost. I even considered its usage location as being possibly meaningful — for example, the human lap or the nonhuman desk top. But, I found that all these criteria, whether alone or combined, were wildly unsatisfying.

For example, it is possible to build a system with staggering computational capability that fits in a briefcase and, in quantity lots, costs less than an Epson America, Inc. PX-8. The system is built around a gallium arsenide logic chip — a favorite in our supercomputer community — that produces more than 1 million floating-point instructions per second and is connected to a megabyte of charge coupled device random-access memory (CCD RAM), with both encased in a microrefrigerator. It provides its user with immensely powerful vector processing power. Because the CCD RAM loses its data when the system is shut off, data could be saved in a laser disk memory unit that also fits in the briefcase.

No one would think of classifying that system as small; on the contrary, it qualifies for the title of supercomputer. If you have any doubts about this, try carrying it through U.S. customs inspection and announcing your intention to take it on holiday in Leningrad.

Not to despair, though, for at long last I think I've deduced what people must mean by a small system, and if I am correct, I judge the future of this systems technology to be as bright, if not brighter, than any technology under development today. In these days of computer industry slowdown, a little brightness may go a long way.

Without further delay, I offer my definition of a small system so that I can go on to relate why I think its future is so bright.

Definition of a small system

A small system is one that can't do too much, or if it can, it can't do it too fast. No one cares if you take it out of the country, even to the USSR. And that's that. This having been said, I would like to make a comment on programming that I will relate to small systems technology.

Let's face it, except for a very few, no users really want to program computers if they have anything better to do. It's a thankless, tedious task. In part, it derives from those natural and expected economic trade-offs that serve to establish the boundary where manufacturers' responsibilities end and users' responsibilities begin. In part, it derives from the blazing ineptitude of these scientists that make computer hardware/software.

It's clear to me that until recently, most of our high-technology computer systems design heroes hadn't a clue how the things they were making might be used. They went about making computing systems and labeled them "general-purpose," hoping that people who purchased them might know. The label suggested that their systems could do practically anything, but it masked the fact that they could do little of practical value — like process a payroll — without a laborious disabling of all those generalities that didn't apply and enabling the few that did for a specific application. This process is what is called "programming."

Thank goodness, in recent times, some firms that make computer systems show signs that their designers have finally figured out the purpose of their products. They switched to making special-purpose devices that are easily programmed to do the jobs we need done as we go about our daily chores, without causing us to worry about or research the mysteries of computer science.

Users are tired of buying general-purpose computer systems to do a few highly specific tasks. Soon to vanish are manufacturers of small systems that can do just about anything anyone wants but require that they learn things as basic as Basic to do them. In their places will emerge those manufacturers that produce systems that do very little but do it well and do it for anyone wanting it done. Possessing this capability, these devices should sell like hotcakes — now and in the near future. These are the small systems of the future.

In the business area, this might be a simple word processor that requires a lot less of the user who just wants to draft and edit letters or reports and doesn't care if the system can't do anything else. A large screen so users can see what they are typing, a reasonably quiet keyboard and those very few functions that allow nonprofessional typists to go at it would suffice.

Hardware and software that will one day allow systems to grow into full-fledged office machines — but at the cost of carrying around now superfluous, hernia-inducing devices and coping with small screens — won't sell any longer. Nor will a spreadsheet device that requires so much setup time that users are compelled to recharge their batteries before refilling their martini glasses on a flight between New York and Los Angeles.

The small systems manufacturing community cannot have missed the success of today's photography industry. Since it has begun packaging film (software) in user-friendly ways, putting the intelligence needed to take a picture into the camera and the film itself and creating cameras (hardware) that anyone can operate, sales have soared. I predict that sales of computer hardware and software will also soar if the newly emerging small systems manufacturing community follows suit.

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

Minimizing the flow of managerial memos

MANAGEMENT MATRIX
Walter F. Cuirle

When was the last time you heard the following statements: "Great idea. Send me a memo on that." "Summarize that status report in a memo." "Let's see that in a memo, and we'll get moving on it." Just yesterday? This morning? It seems that wherever two or more managers gather together, there will surely be a request for a memo.

Why? The reasons vary. Perhaps the best is illustrated in the first example, a memo that establishes who originated a new concept. That's useful. Memos summarizing reports make life a little easier for everyone except the author, who usually winds up writing the memo.

The last example, "Let's see it in a memo, and we'll get moving," is unfortunately common. Generally, you will hear this kind of a request for two reasons. The first is that the requesters are trying to cover their . . . ah, let's say themselves. That's the memo as an undergarment.

The other, better reason is simple communication. If, for example, there is a change in a chain of responsibility or a revision in critical dates, and more people need to know than can be present at a meeting, then there is a need to put it in writing. Just for the purpose of simple, undistorted communication.

For the moment, let's just agree that every piece of paper generated for internal use is overhead, pure and simple, and as such is something that ought to be watched carefully and minimized.

Managing without memos

Is it possible to manage without memos? Yes, depending on the size of the project and the size of the work group.

Look at the simplest case: if one manager directs one person to do one job that takes one day, is a memo necessary to get started? It doesn't seem so. How about one person, one week? Still not big enough. One person, one month? Probably not.

Let's increase the number of people. If you are supervising five people on a one-month project, do you have to direct the project and communicate its status to them in writing? It's doubtful. You certainly talk to each other — you work together, remember? Brief, periodic meetings will handle the status and direction of the project more effectively and in less time than it would take to do it in writing. In short, it's cheaper.

Those are really the deciding factors — time and effect. There's a certain minimum amount of time required to turn out paper; let's say two hours. If the group is small enough and the project is short enough that you can communicate status and direction face-to-face in less than two hours, then memos are less effective than meetings.

On the other hand, just because it takes a minimum of two hours to turn out a one-page memo doesn't mean it takes six hours to turn out three pages. If the project is so complex that it would take a three-hour meeting to cover all the points, or so many people are involved that it would require two meetings to talk to them all, then it is probably more economical to put it in writing.

This implies that the economy of managerial memos is an economy of scale. In situations like this, the obvious question is, where's the break-even point? When are memos and meetings equally economical?

Effective group communication is a book-length topic in itself. But communications start to break down when a group is larger than 10. A group of 15 people, for example, can be either a cocktail party or a classroom lecture but not a particularly effective discussion group.

Measuring project complexity

Complexity measured in terms of the length of a project is a little more difficult to calculate, but go back to the one-person, one-job, one-month example for a handle on it. That one-month project is going to be divided into discrete steps.

Can you handle 10 to 15 related topics every week, in less than your minimum memo time of two hours? You probably can. So that's the break-even point.

You can repeat the analysis using numbers that fit your operation, but you get the idea. For the figures we have here, the break-even point is 10 people working together on a one-month project. You can handle that or anything smaller in weekly meetings. Don't bother writing until it gets bigger.

Cuirle is a senior associate with Nicholas DeMaio Associates in Bryn Mawr, Pa.

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SAS Institute launched an effort to develop a subset of the SAS® Software System for the IBM Personal Computer. After careful study, we agreed that C was the programming language of choice. And that the Lattice® C compiler offered the quality, speed, and efficiency we needed.

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SOFTWARE & SERVICES

AN INTERVIEW

Dr. Sundstrom

As the backbone of its communications strategy, IBM's Systems Network Architecture (SNA) has long been the focus of public attention. But a 1982 addition to SNA has in recent days caught the eye of users and software vendors and, by Big Blue's own admission, become a subject of intense interest in the corporate offices of IBM.

Logical Unit Type 6.2 (LU6.2), dubbed Advanced Program-to-Program Communications, is an SNA protocol that allows software programs to communicate — regardless of their hosts — on a peer-to-peer basis. LU6.2 has been touted as the key to advances in micro-mainframe linkage and distributed processing. The protocol has been implemented in a limited but growing number of IBM products and has been embraced by third-party software vendors. Computerworld Senior Editor Software, John Gallant, talked about the future of LU6.2 with Robert Sundstrom, manager of communications systems architecture with IBM's Communications Products Division in Raleigh, N.C.

Why has it taken so long for manufacturers and users to recognize the significance of LU6.2?

Things like this take time. SNA is celebrating its 11th anniversary. But back in 1974, it wasn't as big a deal as it is today. Before LU6.2 becomes really exciting, it needs to be implemented on a wider variety of products. It won't have a really major impact on our customers until they start installing those products.

It has been said that LU6.2 allows a user to retrieve data without knowledge of where that data resides and execute

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■ Wang introduced Software Manager for its VS minicomputers/46

■ Soft-Switch, Inc. enhanced its Profs Bridge II office systems software/50

■ Apollo Computer introduced three-dimensional graphics software for its Domain workstations/50

■ An applications development system for Prime 50 series processors was unveiled by Advanced Relational Technology, Inc./50

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CICS test program praised, but users balk at price hike

By Charles Babcock
CW New York Bureau

NEW YORK — Early users of an IBM CICS applications testing program said its automated procedures save manpower, but some of them are disputing its $25,000 to $35,000 price.

The program, Verify, now a product of On-Line Software International, Inc. of Fort Lee, N.J., is being used by Manufacturers Hanover Trust Co., Equitable Life Assurance and Shearson Lehman Brothers, Inc., all in New York, and Allis-Chalmers Corp. in Batavia, Ill., to test CICS application programs after they have been modified, spokesmen for the companies said. The users praised the product, but at least two of them questioned On-Line Software International's decision to increase Verify's price tag by more than 300%.

"We have had it for roughly a year now, and we are using the 'be-jeepers' out of it," said John Haab, manager of systems service at Allis-Chalmers. He said Allis-Chalmers has not yet quantified the manpower Verify has saved it in automatically running test data, but he said the gain is significant.

Verify is "a viable, regression testing tool," said Richard Wysocki, assistant manager of technical services at Equitable Life.

All four users agreed the program addressed a need that in the past could only be met through the tedious manual reentry of test data or through more cumbersome competing packages that added steps to the testing process.

Verify uses hooks into the IBM Terminal Control Program to capture test data as it is entered into an application and stores

See PROGRAM page 50

Execs examine twin problems

SOFTALK
By John Gallant
CW Senior Editor

Insights.

At Cincom Systems, Inc.'s recent Directions '85 Executive Management Conference, Tom Nies provided insights into what it's like to compete against IBM in the large systems software arena. Actually, as Nies told it, "compete" may be a misleading term.

Nies, chairman and chief executive officer of Cincom, said his firm and other independent software companies only compete against IBM in MIS shops

See MIS page 56

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Wang net package controls VS software inventory

LOWELL, Mass. — Wang Laboratories, Inc. has announced a network administration package for multisystem VS environments.

According to a spokesman, the Software Manager is integrated into Wang's Distributed Management Facility and allows for the control of software inventories from a central site. With the package, users can electronically distribute software to remote sites through the File Transfer Service and Forward Service in a Wang Systems Networking (WSN) environment. Software Manager can also be used to install software automatically on remote systems and to manage applications at the remote site.

The Software Manager requires Release 6.2 or higher of the VS operating system, VS WSN transport releases and WSN File Transfer Service for network distribution.

The software is priced at $1,250 for a perpetual license on the VS 16, VS 25, VS 45, VS 50, VS 65 or VS 80 and $5,000 for a perpetual license on the VS 85, VS 90, VS 100 and VS 300.

Wang Laboratories is located at One Industrial Ave., Lowell, Mass. 01851.

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SOFTSCOPE

Notes from the software industry front

Alpharetta, Ga.-based Digital Communications Associates, Inc. said that its Irma's Fastlink high-speed modem is supported by Atlanta-based Management Science America, Inc.'s Expert Link microcomputer-to-mainframe link. Irma's Fastlink transfers data at speeds of up to 10K bit/sec. A spokesman said the coupling of the products allows micro users to send downloaded host data to other micros in remote locations at high transmission speeds.

■

Digital Equipment Corp. of Maynard, Mass., has contracted with New York-based Coefficient Systems Corp. to distribute Coefficient's Vterm II communications software through the Digital Distributed Software program. Vterm II is said to allow IBM Personal Computers, Personal Computer XTs and ATs to communicate with DEC VAX and PDP minicomputers. It offers terminal emulation, five file transfer protocols and other general communications capabilities.

■

Digital Equipment Corp. also entered into an agreement with Philon, Inc. of New York that will make Philon's compilers available for DEC's Microvax I and Microvax II under DEC's Ultrix version of AT&T Unix. Philon will supply its Fast/Compilers to DEC under the Digital Classified Software (DCS) program. The DCS program tests third-party software to ensure that it meets DEC specifications.

■

American Channels, Inc. of Lexington, Mass., announced that it will republish internationally developed computer-aided design and manufacturing software packages for the U.S. The company's first products, originally published in Europe by Cadcentre Ltd. of Cambridge, England, include AC/GNC, a graphics-based numerical control tape preparation system; AC/Diad, a mechanical drafting and design system; and AC/Plan, a computer-aided planning package. The products form the core of American Channels' Shop Floor CAD/CAM product line.

■

Westford, Mass.-based American Business Systems, Inc. will supply its Business Accounting Control Systems (Bacs) Software for Pennsauken, N.J.-based Datamedia Corp.'s recently announced AT&T Unix-based 982 Supermicros. The joint marketing agreement covers the entire Bacs line of general ledger, payroll, accounts payable and receivable and order and inventory packages.

■

Management and Computer Services, Inc. (Macs) of Valley Forge, Pa., and Applied Information Development, Inc. (AID) of Oak Brook, Ill., formed what the two companies called a joint business alliance aimed at assisting clients in software testing and quality assurance. Under the pact, the Macs automatic test data generator, Datamacs, and the Tracmacs audit path analyzer will be brought into client sites by AID to carry out specific testing and quality assurance arrangements.

■

Carleton Corp. of Cambridge, Mass., signed a distribution agreement with Honeywell Information Systems of Phoenix. Honeywell Information will market Carleton's Auditec information retrieval, reporting and auditing software for its DPS 8, DPS 88 and DPS 90 processors under the Gcos 8 operating system.

■

AT&T Information Systems has contracted with Syntactics Corp. to distribute, co-label and publish the Crystalwriter package for its 3B2, 3B5 and Unix PC 7300 computers. Crystalwriter is Syntactics' AT&T Unix-based word processing package for multiuser environments.

Introducing seven different ASCII displays...

The new IBM 3161 ASCII Display Station is really seven different ASCII displays in one.

In addition to its own function-rich native mode, the new IBM 3161 can emulate:

- IBM 3101 Model 881
- ADDS Viewpoint*
- Hazeltine 1500*
- Lear Siegler ADM-3A*
- Lear Siegler ADM-5*
- TeleVideo 910*

Besides fitting nicely into existing systems, the IBM 3161 also offers impressive improvements in ergonomics.

Improved Ergonomics For Improved Productivity

Take the 102-key ASCII-style keyboard, for example. Its low profile, gentle contour and typewriter touch make for faster keying with fewer errors. The keyboard has programmable function and editing keys so it can be custom-tailored to meet your application needs.

Then, for comfortable viewing, there's the tilt and swivel of the 12" display. And the sharp, clear 8 x 16 character matrix for easy reading. Plus cursor, character and field attributes (blink, reverse video, underscore, dual intensity, etc.). And scrolling. And partitioning. And lots more.

The IBM 3163 with Plug-in Cartridge

And, as if that weren't enough, we're also announcing

The sharp 8 x 16 character matrix helps make for easier reading and fewer operator errors.

a second new ASCII display station with even higher function—the IBM 3163.

Outwardly, these two new displays look alike. But the 3163, in addition to its built-in emulation of the IBM 3101 Model 881, also offers the ability to emulate the DEC VT 52 and VT 100* by means of a unique plug-in cartridge.

And while you'll like the power and flexibility of the 3161, for your high-function applications the 3163 goes even further. For example, a 7,680-character buffer and up to three windows enable you to view and modify portions of different host data bases. The 3163 lets you redefine and even recap the keys.

On both displays the setup is menu-guided and written in plain English, so it can be done easily and quickly. The point is, both are designed to improve your user productivity.

Very Attractive Prices

The price per terminal is $695 for the 3161 and $1,095 for the 3163. Quantity discounts are available. What's more, IBM maintenance offerings start as low as $35 per year per terminal for customer carry-in repair.

Now there's a new family of ASCII displays with the quality, service and support IBM is famous for. Both displays are available through IBM Authorized Distributors and IBM marketing representatives.

FEATURES	3161	3163
Lines x Characters	25 x 80	25 x 80
Double-sized chars	No	Yes
Line drawing chars	24	24
Vertical scroll	Jump	Jump/ Smooth
Definable function keys	24	24
Windowing	No	Yes
Partitioning	Horiz	Vert/Horiz

Call 1 800 IBM-2468, Ext. LE/90 for the name of an Authorized Distributor near you.

IBM

*ADDS Viewpoint is a trademark of Applied Digital Data Systems, Inc.; Hazeltine 1500 is a trademark of Hazeltine Corp.; Lear Siegler ADM-3A/ADM-5 are trademarks of Lear Siegler, Inc.; TeleVideo 910 is a trademark of TeleVideo Systems, Inc.; DEC VT 52/VT 100 are trademarks of Digital Equipment Corporation.

in one.

The IBM 3161 ASCII Display Station

Soft-Switch upgrades Profs interface

Dissimilar systems now able to exchange data

KING OF PRUSSIA, Pa. — The capability to exchange notes and final-form documents between the IBM Professional Office System (Profs) office automation system and dissimilar office systems has been added to Soft-Switch, Inc.'s Profs Bridge II interface.

Previously, the Soft-Switch Profs interface allowed users of non-IBM office systems to exchange only revisable-form documents with Profs users in IBM VM environments. IBM's Profs includes electronic mail, calendaring and document preparation capabilities.

The Soft-Switch interface now allows users of systems from Wang Laboratories, Inc. and Xerox Corp. to send and receive notes to and from Profs users.

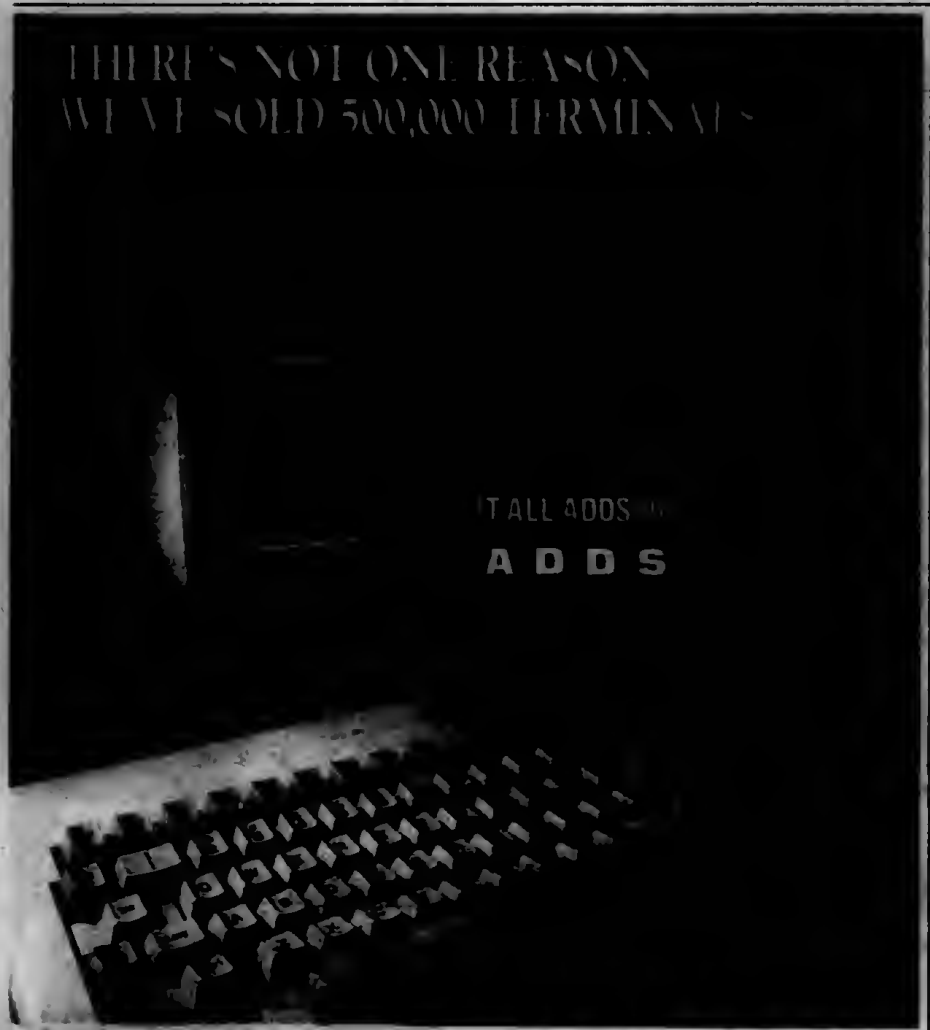
Documents from a Wang system that are intended for Profs users are automatically formatted into Profs notes and final-form documents and appear as a normal Profs incoming mail item to Profs users, the vendor said.

Profs Bridge II also supports Generalized Mark-Up Language in final-form documents, and includes a revised addressing scheme.

The Soft-Switch interface supports the IBM Personal Computer, Final Form Print Image, IBM's Document Control Facility, Displaywriter, Displaywrite 2, Displaywrite 3, IBM's 5520 terminal and the 6640 and 6670 Laser Printers. It also supports NBI Corp.'s Ossys 8, Ossys 64, 3000 and 4000 systems, the Wang Office Information System and VS systems, Xerox's 850/860, and Multimate International Corp.'s Multimate word processing package on the IBM Personal Computer.

The Profs Bridge II is priced at $20,000.

Additional information is available from Soft-Switch, which is located at 200 N. Warner Road, King of Prussia, Pa. 19406.



CW
Applied Digital Data Systems Inc.
A Subsidiary of NCR Corporation
100 Marcus Blvd., Hauppauge, NY 11788 USA
Tel. (516) 231-5400 – Telex 510-227-9696 – Fax (516) 231-7378
Please have a representative contact me. Meanwhile, send me literature on the ADDS Viewpoint terminals.
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TITLE
COMPANY
STREET CITY
STATE ZIP

Centre info manager out

REDWOOD CITY, Calif. — Advanced Relational Technology, Inc. has announced the Centre Information Management System, a fourth-generation applications development system for Prime Computer, Inc. 50 series minicomputers.

Centre is upwardly compatible with Advanced Relational Technology's Relgraf Information Management System, the Prime version of which is being discontinued.

The Centre system is based on Advanced Relational Technology's proprietary relational data base management system (DBMS) technology, which includes a compiled query language and special-purpose file system. The Centre system was built around a relational file management system with its own buffer management, recovery and transaction support. This feature is said to speed data retrieval and improve host performance by reducing disk I/O.

The applications development system includes a report writer, full screen forms management and Advanced Relational Technology's nonprocedural language based on SQL.

Release 3 of Centre, including full screen forms management, report writer and fourth-generation applications development languages, together with the Centre relational DBMS, is priced at $37,500 for a license on the Prime 9650, 9750 and 9955 processors. On the Prime 2250 and 2550 processors, the price is $22,000.

Advanced Relational Technology is located at Suite 306, 702 Marshall St., Redwood City, Calif. 94063.

Apollo graphics software debuts

CHELMSFORD, Mass. — Apollo Computer, Inc. has announced that three-dimensional graphics software modeled after the emerging Programmer's Hierarchical Interactive Graphics Systems standard, is now available for its Domain workstations with the SR9 release of Apollo's Aegis operating system.

The Graphics Metafile Resource (GMR) facility is said to offer full 3-D functionality, including interactive scaling and rotation, complex viewing, interactive editing, drawing and displaying of objects.

The graphics metafile feature of GMR is an editable, tree-structured data base that can be shared among applications and viewed on any Apollo workstation on the distributed Domain network. The metafile can be stored and redisplayed, revised and reused at any time, a spokesman said.

The GMR will become standard on all Domain workstations, including the recently announced DN330 and DN560 models, with the updated Aegis operating system. The GMR is also compatible with Domain/IX, the company's implementation of AT&T's Unix System V and University of California at Berkeley 4.2 Unix.

Apollo is located at 15 Elizabeth Drive, Chelmsford, Mass. 01824.

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What do you call query and reporting tools so simply and powerfully rendered that even a novice will find them no more difficult to work with than a personal computer spreadsheet?

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The Masterpiece series is a family of mainframe business software products—a classification and a category which may lead you to conclude that it is like other mainframe software products.

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The Masterpiece design is so clean and uncluttered that it makes current and future applications efficient to develop and easy to use. Masterpiece comes with none of the excess baggage, inherent short-comings or system limitations that have traditionally plagued the people who need business information and the people who manage it.

Masterpiece is, in every aspect, a new family of software products.

And, in every aspect, an *improvement* over the software packages you may be used to.

Or are, in fact, now using.

Intelligent Architecture Design: The Fundamental Difference.

Previous software designs have been developed to better utilize the power of the computer.

Masterpiece was designed to mirror the methods and styles of the work place and to anticipate the *inadequacies* of the computer.

Masterpiece design is called Intelligent Architecture. It's a new term. And a new way to build software. Now, Intelligent Architecture brings new meaning to concepts like "modularity," "borderless integration" and "event-oriented processing."

Only application-specific code is contained in the application... other coding (system code, interfaces, code common to multiple applications) is separated out and coordinated by the Intelligent Architecture itself.

This means that ultimately a user can adopt a new database management system without the slightest change in either his way of working or in the application code itself.

Only software built in this manner, is software that will endure.

The Intelligent Architecture design means that all menus and screen prompts become common to all Masterpiece applications. It means that the way users interact with an application will be the same from application to application—a significant factor contributing to greater ease-of-learning and ease-of-use.

It is this capacity, present now in the Masterpiece Intelligent Architecture design, that lifts Masterpiece beyond the promise of other software products in its class.

And *that* is the fundamental difference.

Masterpiece is a trademark of Software International Corporation. Intelligent Architecture is a trademark of Software International Corporation. MasterQuery is a trademark of Software International Corporation. MasterSecurity is a trademark of Software International Corporation.

Masterpiece: Common Functions.

The reason Masterpiece works so well is because each of its pieces work so well together.

And apart.

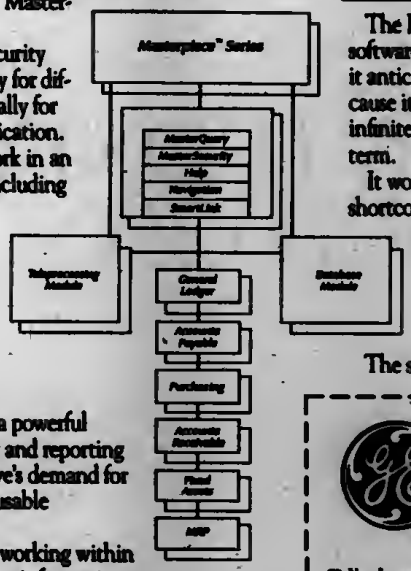
The MasterSecurity™ system, Online Help and Navigation features work across (and are common to) all Masterpiece applications.

But because they are separate from all applications, Online Help, for example, can be custom modified or even translated into different languages.

The Navigation feature lets you move from screen to screen with direct access from one Masterpiece application to another.

Levels within the MasterSecurity system can be determined not only for different applications but set specifically for transactions within the same application.

Everything is designed to work in an intelligent and modular fashion including what may now be the industry's most advanced query tool... MasterQuery.™



MasterQuery System.

The MasterQuery system is a powerful fourth generation borderless query and reporting tool designed to satisfy an executive's demand for instantly accessible and instantly usable information.

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SOFTWARE & SERVICES

SYSTEMS SOFTWARE

■ **Business Controls Corp. has announced a split-screen editor for multifile editing on Digital Equipment Corp. VAX-11 minicomputers.**

The Splits package reportedly allows character editing on one file while viewing a second file. The software allows the top half of a terminal screen to display the viewed file with full search and scan capability, while the bottom half contains the file being edited, with full character editing capability.

Splits is said to conform to all DEC EDT conventions, using keypad and function keys similar to EDT.

The cost of Splits is $500.

Business Controls, 3-7 W. First St., Clifton, N.J. 07011.

■ **Mid-States Computer Corp. has announced Remote Program Support (RPS) communications software for IBM System/34 and System/36 minicomputers.**

RPS is said to allow users to transfer library members, OCL job streams, spool entries and data files between System/34 and 36 processors via dial-up telephone lines. With RPS, users can execute a job stream at the receiving location that was created at the sending location.

RPS costs $900 with a $100 charge per additional CPU. A site license costs $1,800.

Mid-States Computer, P.O. Box 1584, Grand Island, Neb. 68802.

■ **New Generation Software, Inc. (NGS) has announced Diskeaver/36, a disk space maximization tool for the IBM System/36.**

NGS reportedly allows users to reduce the sizes of object libraries by up to 60%. It allows users to limit their on-line storage to the part of the object code needed in normal program operation. It also can reorganize data base files, the vendor said.

The file reorganization system reportedly enables users to reorganize files in all libraries, all files in a single library or selected files in a library.

Diskeaver/36 is priced at $985.

NGS, 3840 Rosin Court, Sacramento, Calif. 95834.

■ **Specialized Systems Consultants, Inc. has introduced a C Cross Compiler package for Digital Equipment Corp.'s VAX family, Sun Microsystems, Inc. workstations, AT&T's Personal Computer 6300 and Plexus Computers, Inc. micros running the AT&T Unix operating system.**

The product allows programmers to write and debug programs in the C language on a Unix-based host and then cross-compile the program to the target microprocessor.

The C Cross Compiler package includes separate compilation and linking capabilities and an embedded assembly language.

It is priced at $3,500.

Specialized Systems Consultants, P.O. Box 7, Northgate Station, Seattle, Wash. 98125.

PRODUCTIVITY AIDS

■ **Intelligent Information Systems, Inc. (IIS) has announced IIS/Destiny, an applications development system for users of Digital Equipment Corp. VAX computers.**

IIS/Destiny includes a development language, a query facility with report-generation capabilities, a data dictionary and a data base management system that supports relational, network and hierarchical data base models, the vendor said. IIS/Destiny reportedly speeds the development of applications and can reduce applications maintenance.

IIS/Destiny is priced from $29,500 for the VAX-11/730 to $69,500 for the VAX 8600.

Intelligent Information Systems, 90 West St., New York, N.Y. 10006.

■ **Help/38 Systems has introduced a productivity package for the IBM System/38.**

Easy View reportedly allows users to display and correct System/38 files without programming and allows them to locate and fix programming bugs. Users can check update programs in test mode and create test data base files without programming, according to the vendor.

Easy View is said to be able to convert record contents into four formats: the Hex Display format displays field names beneath corresponding strings of hex code; EZ-Field formats records, placing field headings on the left and values unpacked and edited on the right; Composite Display displays fields selected; and EZ-Field Composite allows field values to be displayed, unpacked and edited next to their headings.

Easy View costs $850 per CPU.

Help/38 Systems, 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55345.

■ **Oceanic Information Systems, Inc. has released fourth-generation systems development productivity tools for IBM mainframes in OS, DOS and CMS operating environments. The products were designed for use with the company's Extracto nonprocedural data management and report writer tool.**

Compiler/XL is said to allow Extracto users to select between an interpretative mode or a compiled mode. The product can scan control blocks and generate and execute machine code. It costs $20,000.

Screen Power/XL allows users to develop interactive programs under CICS, TSO or with Cullinet Software, Inc.'s IDMS-DC data base manage-

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SOFTWARE & SERVICES

ment system. Users can request a variety of different screen formats. Each of these screens permits users to enter new data for automatic validation. Data entered by the user can be used to direct processing, read records, modify or rewrite a record or create a file. Screen Power/XL will be available in September for a price of $6,200.

Link/XL is Oceanic's licensed version of Micro-Tempus, Inc.'s Tempus Link micro-mainframe communications product. When used under Extractor and in conjunction with the IBM Personal Computer line, Link/XL uses Micro-Tempus' virtual diskette technology to allow users to read and write files residing on the mainframe. The base price for the Link/XL is $6,200.

Oceanic Information Systems, Middlesex Technology Center, 800 Middlesex Tnpk., Billerica, Mass. 01821.

APPLICATION PACKAGES

■ Skantek Corp. has introduced optical character recognition (OCR) software for its engineering drawing scanner.

A spokesman said the SK 401 software reads and digitizes hand-lettering and printed text. The software is said to reduce the storage needed for computer-aided design and engineering systems.

With OCR capabilities, a drawing's text and graphics can reportedly be read simultaneously. The scanned data is then converted into Ascii-format International Graphics Exchange Standard files.

The SK-401 OCR software is priced at $35,000.

Skantek, 150 Mt. Bethel Road, Warren, N.J. 07060.

■ Honeywell, Inc. has introduced Release 1.3 of its Magnetic Ink Character Recognition (MICR) Plus II used with Honeywell document handlers for banks and financial institutions.

According to a spokesman, MICR Plus II Release 1.3 eliminates the need for magnetic tape on Honeywell document handlers and includes capabilities for producing co-mingled cash letters, accepting non-MICR input and making automatic adjustments to cash letters. A Cash Letter Adjustment feature permits automatic generation of reports that list changes to cash letter content because of corrections made in on-line balancing procedures, a spokesman said.

The annual primary license fee is $3,308 with an initial license fee of $12,500.

Honeywell, 200 Smith St., Waltham, Mass. 02154.

■ Software Express has released a directory of vertical market AT&T Unix applications that have been developed with the company's Aggen application generator.

Each of the vertical market packages runs on a range of computers including the IBM Personal Computer AT and Amdahl Corp. mainframes.

The directory is available for $10.

Software Express, 2925 Briarpark Drive, Houston, Texas. 77042.

■ Silver-Lisco, Inc. has announced Version 5 of its Schematic Design System (SDS) software for computer-aided engineering. The company also announced that its Design Capture System, including SDS Version 5, is now available for Digital Equipment Corp.'s Vaxstation I and Vaxstation 500 workstations.

According to a spokesman, the Computer-Aided Schematic System (Case) within SDS Version 5 now supports up to 10 schematic windows, permitting multiple windows to be opened onto a single schematic. Different portions of the windows can be displayed and users can move between windows.

The Design Capture system, including SDS Version 5, costs $10,000.

Silver-Lisco, 1080 Marsh Road, Menlo Park, Calif. 94025.

■ Mentor Graphics Corp. has announced the Meimon software simulation package for use in simulating Case and SDS very large-scale integration devices. The software runs on Mentor Graphics workstations.

Continued on page 89

folks. So you can forget about publishing reams of short memos. Its voice prompts guide you step by step. So there's no chance for miscommunication. Problems are solved. Decisions are moved along.

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NIES from page 45

that evaluate systems supplied by vendors other than IBM. Nies said Cincom surveyed 60 users of its data base management system and an equal number of IBM IMS DBMS users.

The study indicated that Cincom's users had all reviewed a variety of products before selecting their DBMS. The 60 IMS users, on the other hand, had not considered anything but the IBM product.

IBM fares poorly against independents

As Nies put it, Cincom's sales don't come out of IBM's hide unless there is a product evaluation. Nies said that, where there is a product review, IBM's products consistently fare poorly against the independent offerings.

> ***'The computer industry is slowing down because of the problems involved with software development.'***
>
> — David Banks
> Cadre Technologies, Inc.

"IBM is generally unchallenged, except when there is an evaluation," Nies said. "When Cincom wins, it is against the independents.

"Unless our products are better, unless our service and support is better than IBM's, we have no chance to win. All things being equal, we would lose. We have to be substantially better to win, provided there is an evaluation at all."

Nies' comments are enlightening in view of the strides the independent software vendors have made in recent years, especially in DBMS — a market that is of only slightly less importance to IBM than operating systems, wherein Big Blue holds most, if not all, of the cards. Though IBM still controls roughly two-thirds of the DBMS market, the independents continue to tear away chunks of its market lead.

Most analysts readily state that the independent vendors' DBMS products are more advanced than IBM's offerings, especially the sophisticated fourth-generation languages and other productivity tools the independents offer in conjunction with their DBMS. But you cannot play to win if you don't know where the game is being held.

■

"The computer industry is slowing down because of the problems involved with software development," according to David Banks, president and chief executive officer of Cadre Technologies, Inc.

Banks has a good point, and it is one that an increasing number of companies are taking to heart. Cadre is part of the growing corps of firms offering workstation-type systems that address either the design or analysis phases of the software development life cycle.

Specifically, Cadre's Teamwork/Systems Analysis (SA) is a turnkey system aimed at the requirements analysis phase — a phase that Banks said comprises roughly 35% of the software development life cycle. Currently hosted on multiuser Apollo Computer, Inc. systems, Teamwork/SA embodies what Banks called a structured analysis methodology designed to speed the drafting of accurate and complete analysis models that can later be used in the design phase.

A single-user version costs about $35,000, and a multiuser version costs roughly $42,000 per node.

According to Banks, the structured analysis procedure, while recognized as vital to the development of quality systems, is so tedious when done manually that many organizations bypass it entirely. As a result, Banks is quick to point out, completed systems don't meet end-user needs, if the system is completed at all, and the ensuing maintenance workload is increased exponentially.

He said research has shown that approximately two-thirds of system bugs can be traced to errors and misconceptions in the design and analysis phases rather than coding mistakes.

Yet most of the automation efforts in software design have been aimed at the coding phase — perhaps the smallest portion of the development life cycle.

Cobbler's children last to get shoes

Banks said one of the biggest problems fledgling Cadre faces in promoting Teamwork/SA is trying to convince MIS managers in the corporate world of the value of investing in such workstation products for programmers. Banks called it a case of the cobbler's children being the last to get new shoes.

He said management in industries such as aerospace, engineering and defense is more easily sold on the concept, having had good experiences with workstation products for computer-aided design, manufacture and engineering.

The increasing attention to tools that aid in software development is encouraging. But Banks' comments also indicated that it may be some time before mainstream DP shops begin to implement the technology on anything but an exploratory basis. It is ironic that software developers may be one of the last groups to benefit from the fruits of their own labor.

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PROGRAM from page 45

it in an IBM Vsam file, Haab said. After a program is modified, it captures the results of an application run and compares the two, noting discrepancies. The programmer can then inspect the differences to see whether they reflect anticipated changes or unexpected results, Haab said.

Before it installed Verify, Manufacturers Hanover had to schedule clerks for overtime work to enter and reenter test data. Complete testing took 12 to 13 weeks, a period that has been cut in half with Verify, said Kenneth A. Hamilton, senior vice-president for global systems.

Florence Bell, manager of testing services at Shearson Lehman Brothers, the brokerage house subsidiary of American Express Co., said Verify's test results could be viewed online as screens on a CICS terminal or printed out.

It is this access to test results, along with a more automated testing procedure, that distinguishes Verify from its competitor, a combination of CICS/Common and CICS/Replay from Highlander Systems, Inc., of Orem, Utah, Bell said. She evaluated both, along with an IBM product, Vtam Performance Analysis Reporting System 2 (Pars) with the Teleprocessing Network System (TPNS).

The Replay combination and Vtam Pars-TPNS both required batch processing and reformatting steps before test results could be viewed, Bell said. The IBM product had a manual editing step before reformatting, and data captured by Vtam Pars had to be fed into TPNS for a simulated run as opposed to Verify's use of the actual application to run the test data, according to Bell.

As with Verify, Replay results could be viewed on a CICS terminal after a batch processing run that separated test scripts. Vtam Pars-TPNS results were available at a TSO terminal after a batch process run, she said.

Prices in line with other packages

After evaluating the three, Shearson Lehman bought Verify. Bell said the $25,000 per CPU for a DOS version and $35,000 per CPU for an OS version was in the range of other software development packages.

Equitable Life's Wysocki, however, said his company initially was offered Verify for $6,000 from its developer, Brask Systems, Inc., a four-year old company in Downers-grove, Ill. While Equitable was negotiating with Brask, the company sold Verify, formerly known as TCA, to On-Line Software, and On-Line increased the price to $25,000 before Equitable concluded the deal.

Wysocki and another Verify user, who asked to remain anonymous, said they disputed the price increase. Equitable ended up purchasing the program at close to its listed price.

Joseph Olynick, On-Line's Verify product manager, said his firm was investing in enhancements to the product and was providing technical support for users.

The $6,000 figure represented "a price somebody was charging from his basement," Olynick said.

David Brask, president of Brask Systems, said the program took two man-years to develop. He said he lost sales when he tried to market it at the $6,000 price because potential customers "thought it must be junk."

Continued from page 55

Maimon is compatible with the Mentor Graphics Idea series of computer-aided engineering workstations. Based on an iterative software algorithm, Maimon is said to achieve 100% convergence on the first run of simulation.

It costs from $13,900 to $23,900, the vendor said.

Mentor Graphics, 8500 S.W. Creekside Place, Beaverton, Ore. 97005.

■ **BTI Computer Systems, Inc. has announced that its MCBA business software, the MCBA Generalized Accounting system and the Distribution system, are now available for the BTI 8000 32-bit multiprocessor system.**

Modules of the accounting and distribution systems range in price from $6,500 to $7,000 for general ledger, accounts payable, accounts receivable, payroll, inventory management, customer order processing, purchase order and receiving and bill of materials.

BTI, 870 W. Maude Ave., Sunnyvale, Calif. 94086.

■ **Pathway Design, Inc. has announced Pcpath/Encryption, a hardware-software product for encrypting data used in the company's Pcpath micro-mainframe link.**

The Pcpath/Encryption technology was developed by Jones Futurex, Inc. The product uses Futurex's Encryptor 304 board and Futurex's code on the micro linked to an IBM host, a spokesman said. Pcpath provides links to IBM 370, 4300 and 8100 series and Series 1 processors. The product complies with the national Data Encryption Standard specified by the National Bureau of Standards.

Users encrypt micro files with one keystroke and command. Most of the encryption algorithm is contained in a custom-designed processor.

The price for Pcpath/Encryption, scheduled for September availability, is approximately $900.

Pathway Design, 177 Worcester St., Wellesley, Mass. 02181.

■ **DIS/ADLpipe, Inc. has announced that its line of piping design and engineering applications now runs on Sperry Corp. 1100 series mainframe computers.**

Software products available for

Continued on page 60

Advertisement

informatics general corporation

application development report: MARK V

MARK V® HELPS MINIMIZE NEED FOR IMS-TRAINED PROGRAMMERS

"MARK V is helping us to be responsive to user requirements in a timely fashion, while minimizing the need for a heavy IMS resource," says Mike Berkley, Systems Consultant and MARK IV®/MARK V coordinator at Arizona Public Service Company, a Phoenix-based utility.

A software product of Informatics General Corporation, MARK V is an online application generator that can increase programmer productivity by 30 to 80 percent. The development tool allows the programmer to specify what functions the program is to perform, with minimal knowledge of IMS data base processing or online interfacing requirements.

Arizona Public Service has been using MARK IV, a batch oriented application generator for some time, so the company had built up a considerable MARK IV programming expertise by the time MARK V was brought in. This MARK IV talent has been a great asset in training MARK V programmers for the new online applications the company is developing, Berkley notes.

"In the MARK V applications we've developed so far, we've found that the bulk of the system can be done by someone with little or no experience with IMS, a data-base management system from IBM — especially if the programmer is familiar with MARK IV and its hierarchical structure, for example," he explains. "I believe the programmer needs to have some feel for the IMS environment, but at a much more simplified level than what you need to write IMS COBOL."

However, Berkley cautions, it is still necessary to have an IMS-trained coordinator or data base administrator involved in the application development to assure that IMS efficiencies are maintained.

The first test for MARK V was a tie-in with the existing customer information system to allow charitable contributions with utility payments. It had to be done in one week and was! Next, an accounts receivable package was enhanced. Applications were developed in Data Administration to improve access to the table control system and the IBM Data Dictionary. The payroll/personnel function was the scene for several timely, yet very user friendly systems, including medical monitoring and hazard control. One user was so pleased that they changed direction away from a mini and are now committed to the mainframe, an IBM 3081. Payroll/Personnel Systems Supervisor, Bernie Baker, claims "I now have a tool which allows in-house development to compete with software packages." Baker goes on to add, "I'm extremely pleased and encouraged by the success in using MARK V and plan its use in many future applications."

This set the stage for the most important use of MARK V so far — an enhancement to an existing COBOL Gas Services Request System to provide dispatchers and management with more extensive real time information in "trouble" orders. The system was needed as soon as possible, but heavy IMS experience was not available, while MARK IV experience was. Hank Oen, Supervisor, Gas Systems says, "I was convinced that we could not meet the schedule deadlines with a procedural language."

The first step was a one week MARK V class that Berkley taught to Oen's group. Rather than doing the standard class problem, the students programmed two screens from the actual gas system. One team had a working subsystem by the end of the second day. Because of the specific need, the class featured an extremely high intensity level and many questions. Once the class ended, the heavy development began and the system was installed on time. However, it became clear that the response time was unacceptable, primarily due to browsing through the secondary index and excessive processing. A redesign effort was undertaken, using MARK IV for a data base conversion and making more efficient use of MARK V. In the meantime, the vital part of the system was left in production by removing certain MARK V requests. It was in this two week redesign effort that MARK V excelled, says Oen, "Module interchangeability allowed reconfiguration of functions for performance improvement in weeks vs months." The final result left smiles on the faces of Corporate and Computer services management, the user and technical staff.

"I believe the programmer needs to have some feel for the IMS environment, but a much more simplified level than what you need to write IMS COBOL."

"So far, we've had success using MARK V for smaller applications, especially those with severe time constraints, but I think many of the enhancements have made it a viable product for large-scale systems," Berkley adds. "I particularly like features such as the dynamic action codes, multiple data base updates, data base browsing, subroutine capabilities and, of course, the Program Function keys."

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SNA from page 45

programs anywhere within a network. Is that accurate?
No. You can execute programs anywhere in the network because you can request a conversation with the program. You have location insensitivity in the sense that when you ask for a conversation with a certain program you simply specify the name of the program and the logical unit that it is on. You don't have to know where in the network it is. But you don't have a directory of where files are, for example. You can build that on top of LU6.2, and that is something we are looking at. But that is not something provided by LU6.2 today.

Two software packages supporting LU6.2 are said to be able to communicate as peers regardless of their host processors. How would you classify that communication?
There are two types of LU6.2 implementations. There is what we call the open Application Program Interface [API] and the closed API. The closed API is where you get LU6.2 along with some application. Take our Scanmaster, which is a [facsimile] machine. The customer cannot get in there and write his own programs. So what you are getting in that case is the Document Interchange Architecture application. On the other hand, if you buy [an IBM] CICS system, you get LU6.2 on top of it. You can add any type of application you want to write. What you get is what you buy. If you buy a closed API system, you get the prepackaged application. If you buy an open API product, you can add whatever applications you buy or develop.

Does LU6.2 spell the end for micro-mainframe link products that are based on simple terminal emulation?
I don't see that there is ever an end for anything in this world. People have bought these products, and they're going to continue to use them. To put LU6.2 in a positive way, technology has just introduced another option to the customer. Revolutions are more effective when they are evolutionary.

Considering the importance of LU6.2, why has it taken IBM so long to provide support for it in Personal Computer products?
I don't have a good answer. That question comes up all the time. The only possible answer is that IBM has a limited amount of resources, and there has to be some prioritization.

Is IBM encouraging third-party software vendors to implement LU6.2 in their products?
We have published all the protocols. There is a great big fat book out there with every detail you need to know to implement it.

I think that is a tremendous amount of encouragement. There is no specific support in terms of educational classes or hand-holding or anything.

Is there a master plan as to which IBM products will support it?
It is more of an individual product-by-product decision that is subject, of course, to corporate review.

Is it a subject of great interest to IBM now?
Yes. It has been for some period. I think the terminology would be recognized by all of our executives, and its status in different product plans is a very hot topic.

Is LU6.2 a major step toward distributed processing?
Sure. It allows distributed programs to talk to each other without having to know where the other program is, without having to know the details of the underlying protocols. It is very natural and easy to develop distributed applications using LU6.2. That is its whole goal in life, to make the development of distributed applications as easy as possible.

What would you tell people to look for in the future with LU6.2? What are the things that are going to happen now that this is becoming implemented and supported?
We are past the architecture phase, though we are still working on some enhancements. I think we are also past the initial implementation phase. We have implemented it in a lot of products, and there will be more to come.

I think we are at the stage where LU6.2 is poised to be widely introduced into the world, widely purchased and installed. I think the next phase is going to be the writing of a lot of interesting applications that use LU6.2.

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Continued from page 50

the Sperry mainframes include the Design Information System for maintaining a design data base, ADLpipe for modeling structural analysis of piping systems, Flownet for hydraulic analysis and Adinap for nonlinear analysis of piping materials. The products are priced from $25,000 to $42,000.

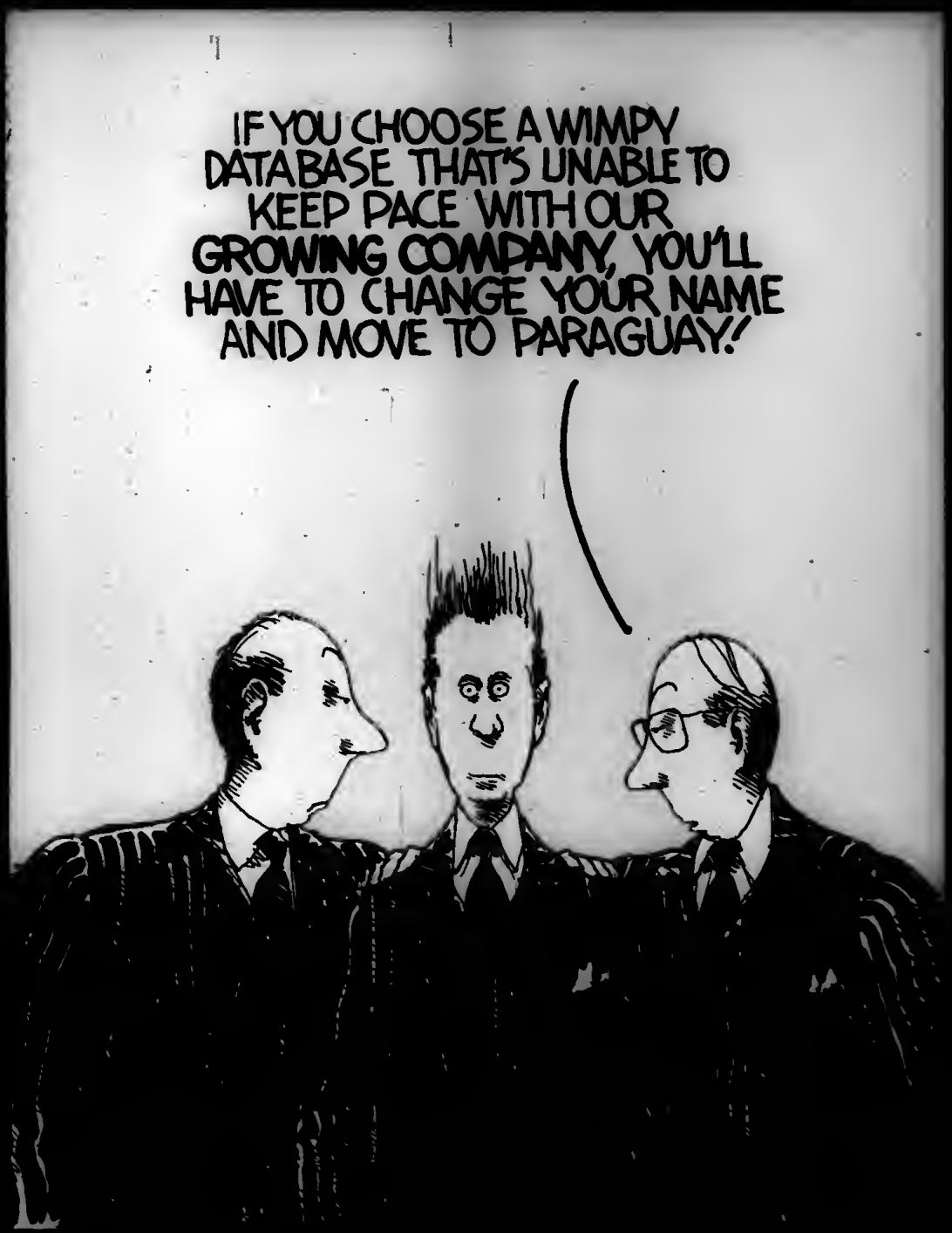
DIS/ADLpipe, 55 Wheeler St., Cambridge, Mass. 02138.

■ Uccel Corp has announced Release 3.2 of its Tax Planning and Compliance Manager, a mainframe software package that automates federal, state and local tax planning and compliance.

Release 3.2 of Tax Planning and Compliance Manager runs in IBM's IMS DB/DC environments. The product is supported on IBM's 370, 3030, 3080 and 4300 series machines.

The Tax Planning and Compliance Manager is priced from $49,500.

Uccel, Uccel Tower, Exchange Park, Dallas, Texas 75235.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PC Magazine
September 4, 1984

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Network Revelation has it all: variable length fields to conserve precious disk space; unlimited files, fields and records; data dictionaries; dBase II® and Lotus 1-2-3™ conversion utilities; a high-speed compiler; an interactive program debugger; and prices that begin at just $1495 for a complete four user system (suggested U.S. list price).

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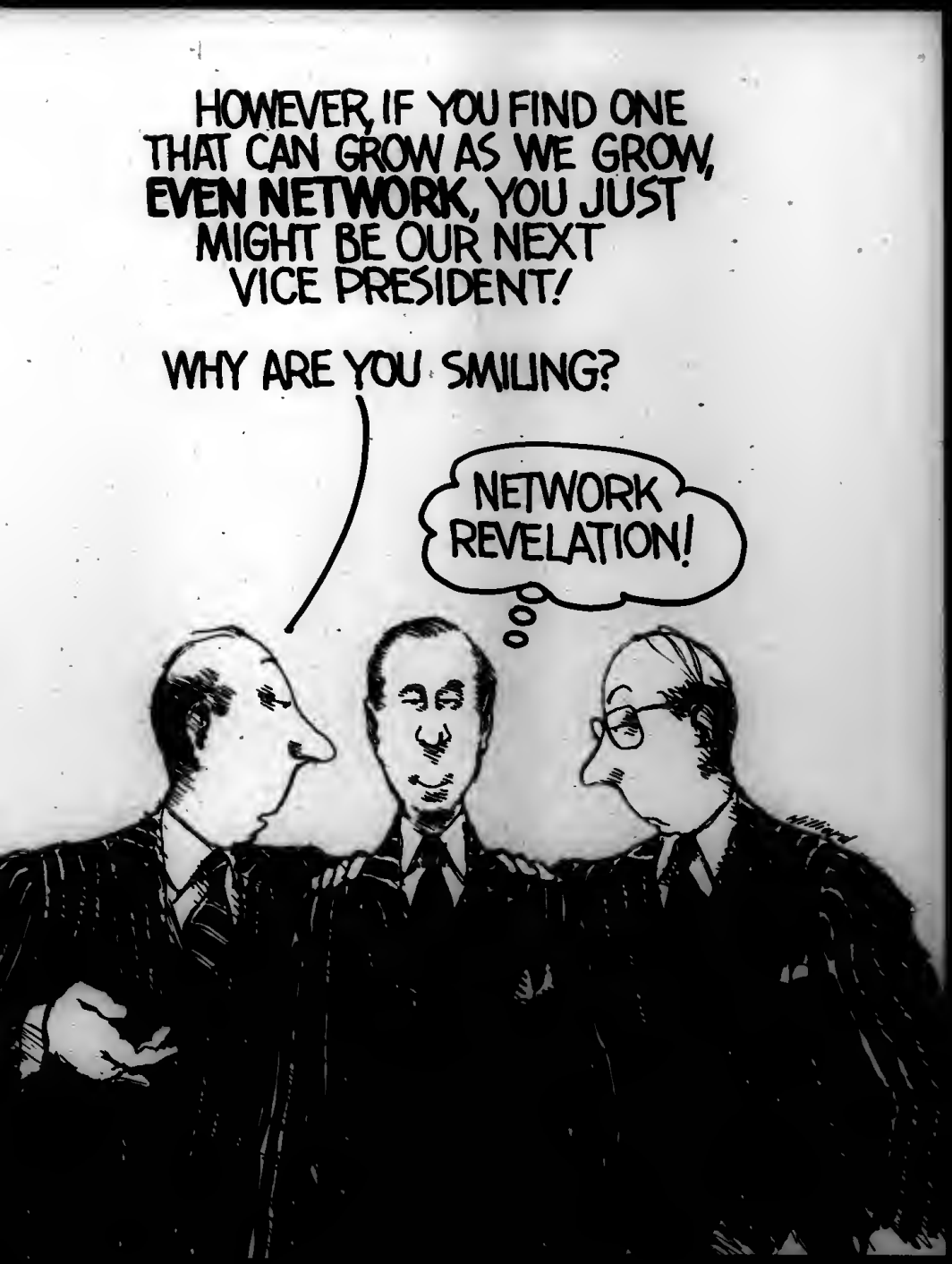
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A revealing point by point comparison between Revelation, R: base 5000 and dBase III

	Network Revelation	R:base 5000	dBase III
Maximum Characters per Record	65000	1530	4000
Maximum Fields per Record	65000	400	128
Maximum Files per Database	Unlimited	40	Unlimited
Maximum Files in Use Concurrently	6000	3	15
Number of Relational Operators	9	6	6
Data Dictionary	Yes	Yes	No
Procedural Language	Yes	Yes	Yes
Variable-Length Fields	Yes	No	No
Multi-Value Fields	Yes	No	No
Symbolic Fields	Yes	No	No
Dynamic Joins (in RAM)	Yes	No	No
8087/80287 Support	Yes	No	No
Automatic Key Index Maintenance	Yes	Yes	Yes
Multiple Field Indexing	Yes	No	Yes
Report Writing Features:			
A) Access to System Date and Time	Yes	Yes	No
B) Choice of Column or Row Format	Yes	Yes	No
C) Accessible Tables	6000	40	10
Password Security	Yes	Yes	No
User-Definable Data Entry Rules	Yes	Yes	No
Context Sensitive Help	Yes	No	No
Pre-Defined Macros	Yes	Yes	Yes
Utilities to Access Program Files From:[1]	dBase II Lotus 1-2-3	dBase II, Lotus 1-2-3 pfs:file, R:base 4000	dBase II
Access to All DOS Commands	Yes	No	No
Application Generator	Yes	Yes	No
Application Compiler[1]	Yes	Yes	No
Run-Time Module[1]	Yes	Yes[3]	Yes[3]
Natural Language	Yes	Yes[3]	No
Network Version	Yes	No[4]	No
Mainframe to Micro Communications[1]	Yes	No	No

1) From Original Manufacturer; 2) Available Soon, 3) Extra Cost Option, 4) Announced for Fall 1985

dBase II is a registered trademark and dBase III is a trademark of Ashton-Tate. R:base 5000 is a trademark of MicroRIM, Inc. MS is a trademark of Microsoft. IBM is a registered trademark of International Business Machines Corporation. NetWare is a trademark of Novell, Inc.

I think Network Revelation is going to get me promoted and keep me from being transferred to Paraguay.

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IN DEPTH

Motivating Maintenance Personnel

By J. Daniel Couger

■ ■ ■

"Maintenance ... tends to act as a millstone around the neck of the development organization."
— Philip Howard

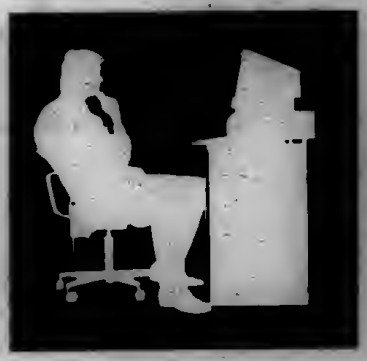
"Traditionally, program maintenance has been viewed as a second-class activity, with an admixture of on-the-job training for beginners and of low-status assignments for outcasts and the fallen."
— Richard E. Gunderman

The above quotations are typical of the attitudes concerning maintenance. They take on added importance when one recognizes that maintenance constitutes more than half of the work of the typical information systems department. Worse yet, that percentage is growing and is forecast to be more than 60% by 1990.

Our research over the past seven years has shown that maintenance work has only one-half to two-thirds the motivating potential of other programming/analysis work (Figure 1). That fact was revealed through analysis of our national data base of more than 8,000 computer personnel.

The job's motivating potential falls precipitously as the amount of maintenance increases. As shown by the curve on the left in Figure 1, fix-it activities are especially demotivating. However, the curve on the right shows every category of maintenance as demotivating. This chart illustrates the huge potential for improvement.

Despite the prevailing view of maintenance, some progressive organizations have proved that such work can be enhanced. Maintenance productivity is as high as that in newly developed organizations. The approach taken in these organizations is analyzed in



PHOTOILLUSTRATIONS BY CROWELL/JACOBSEN

Figure 1

depth in the new Conger-Colter book, *Maintenance Programming: Improved Productivity Through Motivation*, released recently by Prentice-Hall, Inc.

It took a year to identify 10 organizations with good maintenance productivity. In phase one of the research, more than 500 persons in the 10 organizations completed the Conger-Ikawuchi diagnostic survey questionnaire for computer personnel. In phase two, on-site interviews were conducted with 104 persons — 61 analysts and programmers and 43 supervisors/managers of systems departments. The results demonstrate that productivity can improve by using motivation enhancement procedures — with at least 10% and as much as 40% improvement in productivity.

We synthesized the approaches used in the 10 organizations into a set of generic procedures and selected 13 applications cases to demonstrate improved motivation for maintenance personnel. One or more of these cases will apply to every organization, be it governmental or industrial.

Cost of maintenance

In a study by Barry W. Boehm comparing data on maintenance cost with other hardware/software costs, the proportion of the hardware/software costs allocated to system maintenance in the typical U.S. computer installation is not only more than half of the total software cost but is also approximately 50% of the total computing cost (Figure 2).

A recent study by the General Accounting Office (GAO) estimates that the federal government spends at least $1.2 billion annually on software maintenance, excluding weapons systems software. A recent U.S. Department of Defense study shows that the cost of development for U.S. Air Force avionics software averages $75 per instruction, while the cost of maintenance corrections of deployed software ranges up to $4,000 per instruction.

For some organizations, the cost of maintenance is even higher (Figure 3). J. L. Eisenhoff indicates that the figure for GM, which is fairly typical of large business software activities, is about 75%. E. B. Daly notes that about 60% of GTE's 10-year life-cycle costs for real-time software are devoted to maintenance. On the two Air Force command and control software systems shown, the maintenance cost was 67% and 72%, respectively.

The Boehm study reports the annual cost of software in the U.S. in 1980 was approximately $40 billion, or about 2% of the gross national product. The number of applications installed has increased substantially, increasing the maintenance load.

In addition, the average system life increased from three years in 1960 to five in 1970 and eight in 1980. The GAO study estimates the current cumulative federal investment in software at $35 billion.

Maintenance is labor-intensive. John Diebold projects that in 1985, the cost of hardware will be one-tenth of the 1970 cost and that labor costs will be twice as high as the cost in 1970 rate. These figures confirm the significance of the maintenance activity throughout the U.S. in both government and private industry.

Productivity problem

As a result of his study of maintenance productivity, Chester Lin observes, "Analysts and programmers generally view the maintenance function as an inferior, noncreative, nonchallenging activity."

As this quote illustrates, maintenance is a problem

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Figure 2

Figure 3

area for management not only because of the high cost but also because of the way the work is perceived by computer professionals.

Gerald Weinberg tells a story about a programmer who frequently changes firms — always after his new development project is installed and he is assigned to maintain it. Weinberg observes that, though apocryphal, the story is representative of what is happening in the industry.

The high cost of turnover

Although the U.S. economic decline has reduced turnover rates, turnover in the computer field is still high compared with other professions, and it is costly.

The cost of replacing maintenance personnel includes the cost of hiring and training. Here, the learning curve for incoming personnel is significant for the following reasons:

- Documentation tends to be poorer on older systems.
- The systems are less structured.
- They are written in assembly language or early versions of a high-level language.
- Few people who originally worked on the system are available in case questions arise.

However, turnover costs that result from loss of personnel dissatisfied by maintenance assignments are negligible compared with the cost of maintaining these systems by using dissatisfied people.

If the industry view of maintenance work as characterized by the comments of Lin and Weinberg is valid, more than half of the analysis/programming work in a computer department is being performed by people who consider the work unchallenging — even boring. The resulting loss in productivity amounts to millions of dollars per year.

Misguided approaches

Some organizations have attempted to lessen the negative attitude about maintenance by renaming the activity. One organization insists that all employees refer to maintenance as "retrofit activity." Several other organizations call the activity "enhancement."

Such a change is merely a superficial approach to correcting the problem. Just as the janitorial field has learned, if you change the name of a dull and boring job, you do not change the job content — it remains a dull and boring job. If you are in maintenance, a new title may help increase status when explaining your job to a person outside the company, but it does not make your work any more motivating.

Although a name change will produce little positive effect, there is promise for improving the situation. Analysis of the Couger-Zawacki survey results for individuals, supplemented by the interview process, reveal some individuals who were not demotivated by maintenance work and who were considered by their supervisors to be quite productive. These individuals believe their maintenance assignments to be challenging and interesting.

Research enables us to identify the job characteristics and personnel characteristics of a productive maintenance environment so that other organizations can emulate these situations.

Growth and motivation

Our prior research [CW, March 10, 1980] shows that people who have a high need for personal growth and development will respond more positively to a job high in motivating potential than will people with low growth need. Obviously, not everyone is able to become internally motivated — even when the motivating potential of the job, measured by a motivating potential score (MPS), is quite high.

Behavioral research shows that the psychological needs of people determine who can, and who cannot, become internally motivated at work. Some people have a strong need for personal accomplishment — for learning and developing beyond where they are now, for being stimulated and challenged and so on. These people are high in growth need strength (GNS).

The key reason for computing GNS is to compare it with the job's potential to fulfill an employee's need for growth. A job low in motivating potential will frustrate a person with high GNS — like trying to fit a square peg in a round hole.

GNS is quite high for computer professionals; compared with other professionals and other job categories, it is the highest of 500 occupations that have been measured.

Computing a job's MPS enables a comparison of employee GNS and the job's potential to motivate that person. MPS reflects a job's potential for eliciting positive internal work motivation on the part of employees. Our previous motivation research shows the degree of "richness of a job" (the MPS level) needs to be matched with the individual's need for a rich job. Not all individuals are seeking enrichment in their jobs.

The most important characteristic in the MPS/employee matchup is GNS. High GNS people are seeking

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MOTOROLA

> *The ideal situation would be a DP department that had 50% of its personnel with low GNS and the other 50% with high GNS. . . . Unfortunately, that ideal situation exists in few organizations.*

high MPS jobs. Assignment of a low GNS person to a high MPS job cannot be expected to result in satisfactory productivity. Conversely, a high-GNS individual will be unchallenged and unproductive in a low MPS job. Figure 4 shows the four-cell matrix that characterizes those MPS/GNS matchups and mismatches.

■ *Cell 1 — High-Scope Task + High GNS = High-Level Congruence*

Individuals in Cell 1 have high GNS. They desire tasks that are challenging — complex, nonstructured tasks that they perceive as significant. They want a high-scope task for which they feel responsible and are aware of expected performance. If we have a match in scope of task and GNS, we have a high level or congruence between task and individual need. Examples of high-scope tasks include new applications development, data base design or telecommunications design.

■ *Cell 2 — High-Scope Task + Low GNS = Low-Level Congruence*

Cell 2 reflects the situation where an employee with low GNS is assigned a high-scope task. The level of congruence is low, and a poor motivational environment results.

An example of this is the promotion of a person from operations, where GNS is lower, into the systems development area. One would not expect good productivity in this situation unless changes are introduced to correct the disparity between task and individual need.

■ *Cell 3 — Low-Scope Task + High GNS = Low-Level Congruence*

In the situation depicted in Cell 3, an employee with high GNS is assigned a low-scope task. The level of congruence is low, and the employee is likely to be frustrated and dissatisfied. There is no assurance that the level of productivity will be high. One example is a routine maintenance taskassigned to a high GNS person.

■ *Cell 4 — Low-Scope Task + Low GNS = High-Level Congruence*

The fourth cell reflects the situation where lower GNS employees (like the former computer operator described above) are assigned less demanding tasks such as routine program maintenance. A high level of congruence exists between task and individual need. The motivational environment is good, and a concommitant high level of productivity can be expected.

The ideal situation

With maintenance constituting approximately 50% of the work load, the ideal situation would be a DP department that had 50% of its personnel with low GNS and the other 50% with high GNS. New systems development could be assigned to the high GNS personnel and maintenance to the others. The Cell 1/Cell 4 situation would exist — high congruence and high productivity could be expected. Unfortunately, that ideal situation exists in few organizations. Managers must intervene to produce a better MPS/GNS mix.

The key point to recognize concerning MPS is that it is comprised of five variables, or job dimensions: skill variety, task identity, task significance, autonomy and feedback from the job. The survey results indicate that the job dimension of skill variety is a key cause of employees perceiving maintenance work as less challenging.

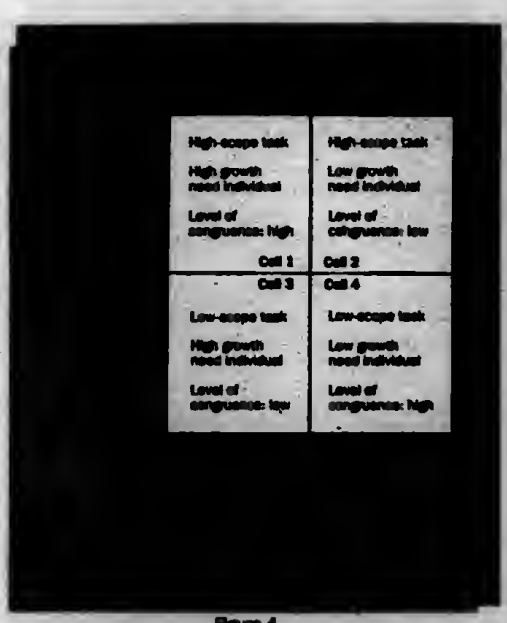

Figure 4

However, to lower MPS to the nonchallenging level, more than one of the core job dimensions must be low. For example, the autonomy variable may be rated low by individuals — not necessarily because their bosses do not give them freedom to operate but because procedures or policies provide little flexibility.

An illustration of this is the constraint caused by procedures under which the original system was designed and programmed, such as being unable to use structured techniques to maintain a system because the original system was nonstructured and having to write changes in an obsolete assembly language because the programs were originally coded in that language.

Even though supervisors may be unable to redesign the job to enhance all five dimensions, they can work on enhancing two or three to compensate for the low value of the other job dimensions.

Stated another way, if skill variety and autonomy are low, perhaps task identity and significance can be enhanced to raise MPS enough to produce the proper GNS/MPS matchup.

Even the skill variety dimension can be enhanced for maintenance employees. That dimension has two elements — a variety of activities and use of a variety of skills and talents in carrying out the tasks.

When one component of skill variety is constrained — such as confinement to a batch application when the person has the skill to work on on-line systems — the other component can be emphasized.

For example, two people can be assigned to maintain two systems jointly instead of such being required to specialize on one system. In this way, skill variety is enhanced for both employees.

In summary, the research proves that maintenance jobs can be enhanced to the point that motivation levels are comparable to those in new systems development. Such a condition already existed in some of the firms selected for the research, and we were able to document the differences in those jobs. In addition, we have been involved in other job enhancement projects that raise the motivation level of maintenance to that of new development.

The firms selected for the research project have been quite creative in devising approaches to enhance the motivation of maintenance personnel. Some enhancement activities were peculiar to that company's unique situation and are not capable of generalization.

On the other hand, many enhancement activities are portable in the same sense that software can be generalized. Those examples are recorded using a standard reporting format:

■ Identification of the specific motivational issue or issues.

■ Explanation of the resolution process.

■ Evaluation of the results.

The generalized solutions can be applied in most companies with an expectation of similar positive results. As the result, there is a high potential for improved productivity — for individual organizations and for the industry as a whole.

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Maintenance motivation profile: Problems and solutions

Even though supervisors may be unable to redesign a job to enhance all five core job dimensions, they can work on enhancing two or three of the dimensions to compensate for the low value of the others.

In one of the companies we investigated, maintenance productivity was low in the opinion of both the DP manager and the user.

■ **Job description.** The job — maintenance of the inventory system — involved a team of three persons. Change requests were initiated by both the user and the DP manager. User change requests involved the effectiveness of the system, such as revised output formats and incorporation of additional features. DP change requests involved the efficiency of the system — speeding up throughput and sharing data with other applications such as cost accounting and purchasing. Both types of changes were negotiated by the supervisor of the maintenance group. An average of 20 lines of code was required to accomplish the typical change.

The system originally had been implemented five years earlier, and the documentation, not unlike most DP applications, was weak. The code was unstructured; modules were quite large, each involving several hundred instructions.

The system had been patched hundreds of times by more than a dozen programmers, who had progressed through this assignment to more senior positions. One of three programmers presently assigned had worked on the system for 2½ years; the others for 13 months and five months, respectively. However, the latter two each had more than three years' experience in programming.

Change requests were first analyzed by the first programmer, who then suggested an approach to facilitate the modification. He also performed a quality review of the complete code and test results before they were passed on to the supervisor for approval.

Although input was on-line, processing was batch mode. The system was non-data base-oriented but shared data with many other files. More than 30 people used reports from the system daily, and another 15 or so inputted transactions. The view of the programmers as nonproductive was based on their inability to meet a schedule for completing change requests and to reduce the large backlog.

The maintenance programmers griped about not being sent to the training course on the new computer, where the inventory system was being developed and would be processed once completed. They mentioned not being trained in Cobol-74, the language of the new system.

They also cited environmental factors, including the noise level in their area, the lack of individual work space and the deteriorating condition of their furniture.

Finally, in response to performance reviews, the programmers maintained that schedules for change requests were often unrealistic — that management did not take into account the difficulty of modifying a poorly documented, heavily patched, unstructured system.

They said test run turnaround time was poor because they were using the production computer instead of the computer devoted largely to development. Personnel working on a new inventory system, which would replace this one, were using the latter computer.

■ **Motivation analysis.** The manager of this activity also managed 30 other people involved in maintenance. He had attended a Cougar-Colter seminar on motivation of maintenance personnel and wanted to apply his new knowledge.

He chose as a test the problematic inventory maintenance job. He tutored the supervisor of that activity on motivation and asked her to read key portions of his notes from the seminar. He had already determined, through discreet discussions with the supervisor's employees, that her supervisory capability was not part of the problem.

The two began a motivation analysis of the job. The supervisor was a "quick take," as are most high growth need strength (GNS) personnel, and quickly separated the hygienic factors from the core motivating potential score (MPS) factors.

■ **MPS/GNS comparison.** The two discussed the GNS of the inventory group. "When I compare characteristics of these three people to others in the unit, I see them as average in growth need," the supervisor said.

"It looks like we have a mismatch in the individual's need for growth (GNS) and the job's ability to provide that growth (MPS)," the manager noted. "As presently designed, this job is not rich enough to challenge these people."

■ **Work redesign.** Having determined that there was a mismatch in GNS and MPS, the supervisor and the manager began the process of redesigning the job to enhance motivation. They used the framework of the five core job dimensions as their analytical approach.

Skill variety. "Concerning the tools and techniques, we have little flexibility," the supervisor said. "We could allow the use of structured programming techniques, but it

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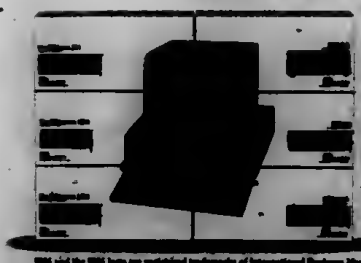

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makes little sense to change the design when the system will soon be replaced by the new inventory system."

The manager agreed. "We can provide variety by letting them work on other applications," he said. "We could combine the teams maintaining the inventory and purchasing systems to increase skill variety for both groups. The reduction in specialization has some disadvantages, though, that might offset the benefit of increased variety."

Task identity. "We should let all three programmers review change requests instead of one screening them first," the supervisor said. "The disadvantage of the lesser experience of the other two is more than offset by enlarging task identity."

"What do you think about letting them in on the negotiation of change requests with the user?" the manager asked. "That way, they'd be in on each phase of the change process and have their task identity increased significantly."

"I agree," the supervisor said. "We can also do something similar at the tail end of the process by letting the two newer programmers participate with the other in the quality review of the completed change."

"These changes will also increase skill variety," the manager added.

Task significance. "Permitting the three to occasionally sit in on the change request negotiations should increase task significance," he added. "Can you think of other ways to help them recognize that the work they're doing is important?"

The supervisor hesitated. "That's tough. It's obvious to everyone that the new inventory system is the significant work. Although," she added, "I might arrange with the project manager on that system to invite my people in on some of the user discussions in implementation to make them more aware of the value of inventory systems to the company."

The manager brightened. "That's how we'll attack the skill variety problem, too. We'll start training them to take over the maintenance of the new system. With its on-line, data base, structured methodology and Cobol-78 characteristics, skill variety will be optimum.

"They won't be able to use these new skills for almost a year, but they will be encouraged, in that they are keeping up-to-date in their field."

Autonomy. "Our earlier ideas will increase autonomy, too," the manager said, "by letting each of them work a change request from beginning to end without intervention."

"Yes, but we can't do much about the autonomy constraint of their being confined to the existing program design and language," the supervisor said. "I'm afraid we're hamstrung on increasing autonomy otherwise."

Feedback. "The one job dimension that looks satisfactory is feedback from the job," the manager suggested. "The small tasks provide continuous feedback."

"However," the supervisor noted, "because they're not meeting schedule, the positive feeling of completing the change request is greatly reduced."

"Could you let them be involved more in the process of schedule determination? That way it's their schedule, too, not just yours," the manager asked.

The supervisor frowned. "You keep coming back to that, don't you? I've got lots of change requests to negotiate for all my groups. I just don't have the time to include all the programmers in these discussions."

"But this is your only problem group," the manager replied. "Once these job enhancements take effect, productivity should improve, and these people should begin meeting schedule. Thereafter, mutual schedule setting should be less time-consuming. Why don't you give it a try?"

■ **Results.** The problem was diminished. These job enhancements produced positive results in the programmers' output and attitudes, and complaints about peripheral issues subsided. Motivation was enhanced, and productivity increased more than 30%.

> *Having determined that there was a mismatch in growth need strength and motivating potential score, the supervisor and the manager began the process of redesigning the job to enhance motivation. They used the framework of the five core job dimensions as their analytical approach.*

About the author

J. Daniel Couger is Distinguished Professor of Computer and Management Science at the University of Colorado, Colorado Springs.

After 30 years in the technical area, Couger began his motivation research in 1977; that research has produced 11 papers, two books and a monograph. Couger has served as a consultant to more than 30 organizations, including many Fortune 500 firms.

He is the author, with Robert A. Zawacki, of Motivating and Managing Computer Personnel. *Most recently he has coauthored* Maintenance Programming: Improved Productivity Through Motivation *with Mel A. Colter.*

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IN DEPTH

4GLs vs. Cobol

4GL packages offer three distinct advantages over Cobol or any other third-generation language: easier customization, such as changing names of data elements; easier maintenance because there is so much less code to maintain; and easier accessibility because end users can write their own inquiries.

By Robert Morison

Software vendors are starting to announce, and even deliver, mainframe application packages written in or accessible by fourth-generation languages, or 4GLs. These include financial, human resources and manufacturing planning and control packages.

These products offer enormous potential: A good 4GL package can be quickly implemented and then modified, as no Cobol package can, to meet the unique requirements of a business. However, with these new products come new pitfalls. Systems development may be constrained not so much by the functionality of the package as by the functionality of the underlying 4GL.

These packages also will change the ways you select software, work with vendors and implement systems. The record to date of 4GL packages is limited, but it is apparent that they present an exciting alternative for application development,

Figure 1

compared to any third-generation language.

Fourth-generation languages are essentially shorthand programming languages. An operation that requires 100 lines of code in a third-generation language such as Cobol typically requires only five to 10 lines in a 4GL. However, beyond this basic criterion of conciseness, 4GLs as a class can be difficult to describe.

Some 4GLs are nonprocedural, meaning that the programmer states only the desired results, not the method of delivering the result. Other languages are largely procedural, with familiar constructs like DOWHILE and GETNEXT. Some are true source programming languages — the statements can be interpreted on the fly and/or compiled into the functional equivalent of a load module. Others are better termed "generator languages" — the statements generate Cobol code, which is then compiled and run.

This variety notwithstanding, the practical value of 4GLs is simply stated: Using a more direct and concise programming language allows you to build applications faster and maintain them with less effort. Hence, 4GL packages offer three distinct advantages over Cobol or other third-generation language packages:

- Easier customization, whether changing names of data elements, coding custom reports or adding extended functionality.
- Easier maintenance, because there is much less code to maintain.
- Easier accessibility, because end users or information center personnel can write their own inquiries using the 4GL.

Fourth-generation language packages can dehorn an old dilemma — Do you buy a package that never really fits the business or attempt a custom implementation that consumes too much time and too many resources? A 4GL package, like the Cobol variety, presents most of your code already written. You can implement it as quickly as your organization can absorb it. But a 4GL package can then evolve into the customized system your business needs much faster than a Cobol package can be modified or a custom system developed in-house.

Figure 1 plots the relative time and resources required to fit an application's requirements for each of four approaches to development.

Take an integrated application, such as an on-line order service or production control system. Even allowing for training programmers in a new language, a custom implementation using a 4GL can generally be accomplished in under half the time required for a custom Cobol implementation. The savings come both in coding time and in time saved through prototyping.

The 4GL's relative performance naturally depends upon its robustness as a programming language. Any functions that the 4GL simply cannot handle will have to be written in Cobol, lengthening the implementation time.

A Cobol package might meet 80% or so of the application requirements to begin with, but modification can be slow and painful. Although cosmetic changes such as output formats should be easy for experienced Cobol programmers, adding data elements and modifying programs to reference them is not.

Any modifications to program logic or processing and the addition of new programs can be extremely difficult. In fact, some Cobol packages in complex applications such as manufacturing are so unwieldy that vendors themselves are finding incorporating upgrades extremely difficult.

Given the problems of modification, it is probably impossible ever to get very close to a 100% fit with a Cobol package. If anything, the business must change to fit the package's constraints, and the package cannot evolve as the business changes.

With its comparative ease of modification and extension, a 4GL package can quickly surpass the fit of a more comprehensive Cobol package. Of the four approaches mentioned above, the most direct path to full fit is to begin with a package based on a solid 4GL and then add the savings a 4GL provides in ongoing maintenance and system evolution.

The 4GL controversy

Before being taken to task for promoting a pipe dream, let me confront a primary issue surrounding 4GLs today: Can they be used as Cobol substitutes? In other words, can you build with 4GLs large production applications of the type traditionally done in Cobol? These are the core systems that help to run businesses, systems characterized by large integrated data bases and high volumes of updates.

In a recent report titled "Fourth Generation Language," International Data Corp. (IDC) reports that, contrary to vendors' marketing claims, 4GLs generally fail as Cobol substitutes: They haven't the required functionality, and they are CPU hogs.

IDC finds these 4GLs best suited for modest-size decision support and information center applications or for prototyping systems to be rewritten in Cobol [CW, Jan. 28].

These findings may stem in part from the way IDC segments the market for analysis. Another class of products, application development systems, often incorporate 4GLs as part of a series of development tools. Some of these languages are very powerful, and their vendors generally claim them to be effective Cobol substitutes. Large and complex applications are written using the application generators, but most of these are actually implemented in a combination of a 4GL and Cobol (to do what the 4GL cannot do or cannot do efficiently).

The lesson in today's market is clear: Caveat emptor. The litmus test of a 4GL's power is indeed whether it can function as a Cobol substitute. Many 4GLs fall short of their vendors' claims; nonetheless, powerful 4GLs are emerging and replacing

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IN DEPTH/4GL VS. COBOL

Cobol on an application-by-application basis. The most powerful 4GLs are superior to Cobol in providing a more direct path to more responsive systems.

On the one hand, these 4GLs will not quickly overcome Cobol's inertia and obviously will not supplant Cobol in the near future, nor will they quickly break the Cobol maintenance backlog in most DP shops. However, ignoring proven 4GL tools can be foolish, and limiting large systems development to Cobol will only increase backlogs. With 4GL systems, the maintenance effort per application will decline, even if the absolute size of maintenance loads does not.

The move toward higher level languages, data base management systems and end-user computing is accelerating. More people are discovering firsthand the power of computers — but not by learning the power of Cobol. The trend is toward more accessible, dynamic and responsive systems. Fourth-generation languages, and especially 4GL packages, are excellent tools for such systems, both for the professional programmers who develop them and the end users who employ them.

A wide spectrum of packages

You should distinguish among three types of packages being marketed in conjunction with 4GLs.

The first is simply a Cobol package made compatible with a 4GL. You can access data either with the supplied Cobol programs or by writing new ones in the 4GL. Such a package offers the convenience of a 4GL for ad hoc inquiry and new programs, but you must maintain the system using two languages, predominantly Cobol.

The second is a hybrid Cobol/4GL package, with some supplied programs written in each. Complex functions are written in Cobol or in Cobol with some embedded 4GL statements. The 4GL tends to be used for interactive inquiries and perhaps updates, and it is available for new programs.

Such packages need close scrutiny. They enjoy the benefits of a 4GL on the surface, but maintenance and modification to the guts of the system must be done in Cobol. The limitations of the 4GL may actually dictate some of the package's functionality. For example, if all interactive programs are by definition written in the 4GL, many updates may be unnecessarily relegated to Cobol batch processing. The limits of the tool, not the needs of the application, may decide what happens when.

The third type is a package written entirely in a 4GL. The advantages for maintenance and modification are obvious. Although only a rare 4GL can serve as the source language for complex update programs and application functions, 100% 4GL packages are available today, even in applications like finance and manufacturing.

Thus, we are really talking about a sliding scale with pure 4GL packages on one end and predominantly Cobol packages on the other. The closer a package comes to pure 4GL, the greater the potential benefits in accessibility, maintenance and modification.

Figure 2

Assessing 4GL packages

The No. 1 criterion in selecting a 4GL package is obviously its applications functionality. After all, you are considering packaged software because many of your requirements are common, and a package gives you a big head start in system development. However, the traditional ways of assessing functionality must be adjusted for 4GL packages, especially if you are matching them against Cobol ones.

Package selection commonly centers on a checklist of primarily functional criteria (Figure 2), which normally reflect a combination of how the business operates today and how it would prefer to operate in the future. The vendor is asked whether the package contains each function or whether the function can be added. Each criterion has a weight, and the package a total score. By this method, the best established Cobol package with the most options frequently appears to be the best choice.

The fallacy in this approach is that, except in very standard applications, packages are seldom good fits. Yet most checklists give insufficient weight to ease of modification and maintenance. So companies purchase what appears to be the best Cobol package, which in fact provides maybe an 80% fit and no hope of coming much closer.

If your requirements are standard, if a Cobol package provides a close fit, if you have little need for modifications or end-user ad hoc access and if you do not wish to maintain the system yourself, then by all means choose the pure Cobol package. Alternatively, if the 4GL package philosophy suits you, if you have unique requirements and if your goal is really something close to a 100%

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fit, then give ease of modification some 25% of the weight in your criteria checklist.

Remember that a relatively lean 4GL package can quickly surpass the fit of a Cobol package full of often extraneous options or even the fit of a hybrid Cobol/4GL package. You must simultaneously assess the package's functionality, the amount of customization you will require and the power of the 4GL and associated DBMS for customization and maintenance.

The bottom line ultimately rules, and it must consider the total cost of producing the degree of fit your business demands plus the ongoing cost of maintenance. This financial analysis should also estimate the future business paybacks, such as improved cash flow through better control of receivables or improved profitability through reduced inventory.

These paybacks often offset the entire cost of software purchase and system development and make any marginal computer overhead associated with a 4GL insignificant. The package that can be effectively implemented more quickly will regularly outperform that which seems to have the better initial fit.

Pitfalls and considerations

Even though 4GLs represent a new technology in most companies, the pitfalls in implementing a 4GL package can be much more organizational than technical. New tools and methods may force changes in how people work. The 4GL approach spawns new expectations, both positive and negative, which must be controlled.

To end users, the 4GL package approach should mean greater opportunity to participate in designing the eventual system. All directly affected users, not just the managers who commonly land on project teams, should have the opportunity to participate.

The quick programming turnaround time with a 4GL allows users to work directly with programmer analysts to design and prototype programs and modifications. Ideally, the 4GL will be used both to do ad hoc inquiries and to work on the implementation team. End users must view the 4GL package not as just another system dropped on them but as a chance to help build a system that truly fits their needs.

Introducing a 4GL poses two problems for programmers in particular and the MIS organization in general. The first is a learning curve. A good 4GL is easy to learn — to do the simple functions vendors stress in their presentations and literature. Mastering the 4GL well enough to write complex programs may take a few months of practice. Thus, it is important to train programmers in the 4GL as early and thoroughly as possible. Note that 4GL packages offer an extraordinary aid in learning the 4GL: a cohesive set of sample programs in the package itself.

The second problem is people's natural resistance to the unfamiliar. Programmers may feel that their current skills (like Cobol) are perceived as obsolete and worry about how good some vendor's proprietary 4GL looks on a resume. Some programmers will take to the 4GL instinctively; others may be reluctant. The key here is internal education in the project's goals and how these contribute to individual productivity and growth. The challenge is to introduce a new tool while capitalizing on the experience and discipline developers already possess.

Computer operations is another group that must be solidly behind the 4GL package implementation. A new system means an added load on computing resources, and (vendor claims notwithstanding) a 4GL package will probably require more runtime resources than would a well-written Cobol equivalent. Again, check the vendor's track record with similar installations and budget for any additional hardware resources. Operations must be ready to provide needed CPU and I/O resources and to tune the application in its production environment.

Most of the burden of organizing a 4GL package implementation naturally falls on the project leader and team. Key to its success is being conservative, even though the 4GL power tempts them to be ambitious. Disciplined project management techniques are vital because the 4GL package changes the ways and speed in which some things get done. Don't let the 4GL's flexibility encourage laxness in project control.

Especially if 4GLs are new to the company, it is sensible to install the package pretty much as is, then gradually employ the 4GL's power for modifications and enhancements. Alternatively, install the package as a pilot for a segment of the business and implement and test necessary modifications before putting the package into general use.

Overcustomization may be a danger, actually prolonging implementation and undermining the purpose of using a 4GL in the first place. If possible, limit initial customization to changing names of data elements, reformatting screens and reports and adding essential data elements.

Figure 3

Also remember that because changes are easier with a 4GL, they can become uncoordinated more easily. Developers must work closely to avoid stepping on one another's toes, and they should use data dictionary and documentation tools to help ensure that modifications to the system are consistent. Develop clear specifications for package modifications — don't try to "ad hoc" your way to a coherent system.

This conservative approach may seem opposed to the ambitious implementation schedules that 4GL packages invite. In fact, disciplined project management will further accelerate, not delay, the implementation.

Planning for implementation

Because things can happen quickly, having a solid project plan for implementing a 4GL package is just as essential as having a project plan for developing a traditional system. The plan must take into account the new 4GL tools as well as the education and revised procedures necessary to use them effectively (Figure 3). It also must specify when to stop the initial modifications in favor of installing and shaking down the system, thus demonstrating its prowess.

The task of controlling expectations and securing cooperation rests not only on the project team but also on management. Because the organization is probably breaking new ground, management must judge whether timetables and goals are realistic. Using a 4GL package invites greater cooperation between the MIS and user communities, but any old organizational barriers must be removed carefully. A sense of complete and exclusionary ownership on either side can sidetrack the project.

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Management may have to intervene occasionally to resolve frictions and jealousies.

Top management should energize all parties by backing the project and its business objectives. They must invest the project team with a clear charter, as well as the authority and visibility to carry it out. The 4GL project must be viewed as part of the business plan, not a renegade action. Management, too, must consciously adopt the 4GL philosophy and recognize that this is not an ordinary implementation. You have purchased a vendor's package, but you are really building your own system.

Developing a 4GL package

A few years ago I was part of a vendor's team developing a 4GL package. The package, a complete manufacturing planning and control system, included standard functions such as bill of material, purchasing, and material and capacity requirements planning (MRP/CRP). It also incorporated shop floor tracking and

Figure 4

a sales order system tied directly to factory production schedules.

Pure 4GL development was possible because the language and associated DBMS, while general-purpose tools, have extensions for manufacturing application functions. The 4GL extensions include concise commands to do bill of material explosions and cost roll-ups as well as to generate MRP.

In Figure 4, for example, the TOTALIZE command is designed to roll up numeric data through all levels of a bill of material, chart of accounts or similar data structure. This simple 4GL statement replaces many hundreds of lines of Cobol and probably 50 or so lines of 4GL code using general-purpose operators.

Developing the package seems swift and easy only in retrospect, however. The team did not start with an existing package. A new tool and a new approach called for a new design. Our stated objective from the start was to build a package designed to be modified.

If the delivery vehicle was Cobol, and, hence, modification was much more difficult, we would have been obliged to incorporate dozens of additional optional features, maybe even modules. This pool of features would make for a slightly better degree of fit with each client, even though the majority of clients would ignore a majority of the features.

Instead, we decided that the package should include the most fundamental and commonly required functions and that the 4GL should be used to customize the rest of a given client's requirements. We adopted an "80% rule," whereby a function would have to be useful to 80% of the basic market (discrete manufacturers) to get into the package.

Within a chosen function, however, we vowed to provide full capability. For example, having decided to handle blanket purchase orders, we decided to include having MRP distinguish between the need to release against an old blanket order and the need to negotiate a new order.

This 80% rule was, of course, much easier to state than to adopt. The resulting package was very capable but seemed uneven in its capabilities. It had few outright "bells and whistles," but it was elaborate in many functions.

The package development, although rapid, took longer than anticipated. The 4GL accounted for much of the speed, but it accelerated prototyping and coding more than analysis and specification. It also created a propensity to revise programs constantly, even at the last minute, and tracking changes became difficult.

About 60% of the programs were simple and were coded in no time. Other programs proved tricky, both because they performed complex functions and because we were sometimes pushing the 4GL beyond its common uses. Though shorter and simpler than their Cobol equivalents, some of the 4GL programs were longer and more complex than we were accustomed to.

We alleviated many of these problems by using an application development tool, which was built as a by-product of the package development. The tool served as an extension to the DBMS' internal data dictionary as well as a repository and clearinghouse for transaction program specifications.

Developers worked on different portions of the package but used a single copy of the application development system. The latter detected inconsistencies such as redundant data elements, and it enforced standards on program documentation. It also printed up-to-date documentation at will — mercifully reducing the documentation manager's hair-tearing over last-minute program changes.

The end results — both the package itself and the demonstration that such products can, and should, be

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Changing the ground rules of software selection

Consideration of a fourth-generation language (4GL) package changes not only the ground rules of software selection but also the relationship between user and vendor. An installation of a Cobol package tends to be rigid, and local modifications are relatively few. A 4GL package, on the other hand, is designed and destined to be modified. Presumably you purchased it because no Cobol package fit your needs, and you wanted to be able to change the package, not your business. The 4GL package allows rapid local modifications, and soon after installation, the system may look far different from the original package.

What happens, then, when the 4GL package vendor supplies upgrades? Using the 4GL, the vendor may be able to integrate enhancements to the package easily and often, but can you integrate them into your system? Here the 4GL is a two-edged sword, and the sharper it is, the quicker your system gets out of sync with the vendor's. A practical solution to this synchronization problem may be the disciplined use of data dictionary and application documentation tools.

In short, if your are considering 4GL packages, do not approach the 4GL package vendor the way you would a Cobol package or software tools vendor. This redefined relationship leads to three basic rules for choosing 4GL packages:

Buy a complete package, not an embryonic one. Banking on vendor "futures" is always risky, but perhaps even more so with 4GL packages. If you modify the package extensively, you may have trouble utilizing the vendor's upgrades. Beware of packages or essential modules advertised as being in alpha, beta, gamma or even omega test. Working with 4GL packages is undoubtedly a new game for the vendor, too.

Be sure the vendor has and can articulate a clear maintenance philosophy. Does the vendor's philosophy mesh with your plans for modifying the package? Does the vendor offer or recommend a data dictionary that will help you incorporate upgrades? Does the vendor provide upgrades and fixes only in the form of new programs? Or do you also receive listings of how the original programs (and your modified versions) were changed?

Recognize that you will be maintaining and enhancing your system far more than the vendor will. This should be a definite advantage: You control more of your own fate. But it also means that your staff must learn to use the 4GL and underlying data base management system. All 4GLs claim to be easy to learn, but some are deceptively difficult when you cross the threshold between simple inquiries and complex updates. Note the quality of vendor documentation, training and direct support both in the package and in the 4GL and DBMS. Remember, you will, by choice, be largely on your own.

Package assessment

Evaluating a 4GL package's ease of modification and maintenance requires two answers. First, how much of the package (and especially the portions you need to modify) is written and maintainable in the 4GL? Second, just how good is the 4GL and its associated DBMS? The latter may be of paramount importance if you have the luxury of choosing between 4GL packages. Here are some basic categories for analyzing a package's underlying technology:

4GL robustness. Can you write the most complex programs you require in the 4GL? How often must you revert to Cobol? If some functions do require Cobol, how smooth is the product's interface to same? Try to check the vendor's experience in writing packages in its own 4GL.

DBMS robustness. For complex and integrated applications, the 4GL must operate on a true DBMS, as opposed to a file manager. The distinction is that a DBMS helps you manage logical relationships between different categories of data such as orders and the items they specify. Consider the underlying data model of the product. Many 4GLs are based on the relational model, which makes them ideal for many functions but may pose practical problems when it comes to enforcing data relationships and handling high transaction volumes efficiently.

Production worthiness. Will the product allow you to run an on-line application with the simultaneous user population and on-line transaction volume you require? Vendor claims are notoriously unreliable in this area. One suspects that they benchmark themselves on very modest applications, then claim the ability to support production systems in general. For large production applications, the DBMS should approach the efficiency of, for example, IMS, just as the 4GL approaches that of Cobol. In other words, the system should handle transaction loads traditionally associated with hierarchical-model DBMS.

Application experience. Has the product been used to build the types of application functions you require? Ideally, the vendor can point to other users who have modified the package in much the same ways you plan to. Be sure to look for direct experience — presentations stressing the vendor's size, growth and number of beta sites can be a smoke screen for lack of a real track record with applications.

In short, evaluate the record of both the package itself (which is likely to be brief) and the underlying software. You must also look to the future to gauge the 4GL's ability to handle your planned modifications. Probably the best way to prove a package's viability — and probe the underbelly of the 4GL — is to arrange a trial installation. Then tackle a complex function in the package and try to modify it.

built with 4GLs — were impressive. Subsequent releases succeeded in rounding out the package's capabilities and cleaning up the inevitable bugs. In addition, the 4GL continues to be used to develop packages in manufacturing and other applications.

Users of the package are pleased with it and are enthusiastic about the 4GL approach. The package meets a good 80% of their needs and quickly evolves into the custom systems they wanted but hadn't the time and resources to develop. The major implementation problems have been organizational, not technical: Users too often adopt the 4GL package idea without selling it to management and MIS.

Breaking from tradition

Starting with 4GL packages, you can build responsive systems faster and maintain responsiveness over their full life spans. You can thus avoid the drawbacks of rigid packages — incomplete to start, impervious to change thereafter.

Despite its proven advantages, the market for 4GL packages remains embryonic. Most prospects still think "package" rather than "system." Those who consider their needs and costs over the lifetime of a system are attracted to the 4GL package. Those looking for a quick fix live by lists of immediate needs and choose Cobol packages with better initial fit. The irony is that the latter are often choosing a package that is slow to implement, never really fits and costs much more in the long run.

The 4GL packages are not widespread, and they are not for everyone. However, the organizations that are already benefiting from these packages recognize business needs that no traditional package or implementation effort can meet. To realize the great benefits of 4GL packages, they are willing to change old methods as well as old technology.

About the author

Robert Morison is the manager of Technical Consulting, Mims Systems, at General Electric Information Services Co. in Burlington, Mass. Mims is a data base management systems and fourth-generation language used to build custom applications and software packages primarily for manufacturing systems.

UNITED STATES BANKRUPTCY COURT
SOUTHERN DISTRICT OF NEW YORK

In re

INFORMATION DISPLAYS INC.,
INTEKS INCORPORATED,

Debtors.

Case No. 84B 20229(HS)
Case No. 84B 20236(HS)
Chapter 7

NOTICE OF ORDER FIXING LAST DATE FOR FILING OF CLAIMS AGAINST DEBTORS IN SUPERSEDED CHAPTER 11 CASES

Cases of the above-captioned Debtors having been filed under Chapter 11 of Title 11 of the United States Code (the "Bankruptcy Code") on May 23 and May 25, 1984, respectively, and the cases having been substantively consolidated by order of this Court dated November 8, 1984, and an order for conversion having been entered on February 20, 1985 directing that liquidation under Chapter 7 of the Bankruptcy Code be proceeded with, and Harvey S. [illegible] having been appointed Chapter 7 trustee, and the Trustee having filed a list of creditors who may have unpaid Chapter 11 obligations incurred by the debtors-in-possession.

PLEASE TAKE NOTICE THAT an order was entered in this case on July 15, 1985, by the undersigned Bankruptcy Judge fixing October 1, 1985, as the last date for the filing of claims against Information Displays, Inc. and Inteks Incorporated as debtors-in-possession, including all claims of the United States, any state or any subdivision thereof, in the Office of the Clerk, United States Bankruptcy Court, 101 East Post Road, White Plains, New York 10601.

PLEASE TAKE FURTHER NOTICE THAT the proofs of such claims shall be in the form prescribed by Section 501 of the Bankruptcy Code and the Bankruptcy Rules and Official Forms thereunder, and shall contain a written statement signed by the claimant setting forth the claim, the consideration therefor, what security, if any, is held therefor, and what payment, if any, has been made thereon, and that the claim is justly owing from the debtors-in-possession to the creditor or his assignor, or otherwise constitutes an allowable claim which arose during the aforesaid Chapter 11 case. All proofs of claim filed pursuant hereto shall be entitled in this case, shall clearly indicate the period in which the claim arose, and shall designate the address to which all notices to the creditor shall be mailed.

PLEASE TAKE FURTHER NOTICE THAT pursuant to Section 348(c) of the Bankruptcy Code, any contract which was entered into or assumed by the debtors-in-possession which was executory in whole or in part at the aforesaid date of entry of the Order converting the case to Chapter 7 shall be deemed to have been rejected unless it they were expressly assumed by the Trustee on or before July 6, 1985.

PLEASE TAKE FURTHER NOTICE THAT claims arising from the rejection by the Chapter 7 Trustee as aforesaid of executory contracts entered into or assumed by said debtors-in-possession shall be filed herein in form and manner as hereinabove provided on or before October 1, 1985.

PLEASE TAKE FURTHER NOTICE THAT any claims directed to be filed by the terms of the Court's order as set forth herein, but not filed within the time herein provided, shall not be allowed and shall be barred, and Information Displays, Inc. and Inteks Incorporated debtors-in-possession shall be forever discharged from any liability with respect to such claims.

Dated: White Plains, New York
July 15, 1985

BY ORDER OF THE COURT

s/ Howard Schwartzberg
UNITED STATES BANKRUPTCY JUDGE

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MICROCOMPUTERS

Fortune blitz boosts multiuser line

High-end SX micros, local-area net debut

By Eric Bender
CW Staff

REDWOOD CITY, Calif. — Fortune Systems Corp. significantly extended its line of AT&T Unix-based 32:16 multiuser microcomputers in late July, rolling out more than 25 products and product enhancements. All will ship this quarter, according to James Campbell, Fortune's chairman and chief executive officer, who expects the products to strengthen Fortune's recent return to profitability (see story page 72).

The debuts included the high-end Fortune 32:16 SX series, a local-area network and other communications offerings, graphics software and hardware products, window management software, a new release of the For:Pro operating system and a host of software applications from Fortune and third-party suppliers. The company also announced upgrade kits and price cuts for earlier system models.

Fortune's SX series machines support up to 24 terminals, using any combination of standard Fortune terminals, Fortune 1000 MS-DOS Workstations, Fortune 1000 Graphics Workstations or IBM Personal Computers and compatible systems, the company said. Based on a 12-MHz Motorola, Inc. 68000 processor, the systems are said to improve performance 25% over the Fortune XP, the company's previous top-of-the-line systems.

A basic $12,995 SX45 configuration includes 1M byte of internal memory, expandable to 2M bytes, a 45M-byte formatted hard disk drive, an 800K-byte floppy disk drive and the For:Pro operating system. Console, keyboard and CRT controller board are not included. The SX70, a similar model with a 70M-byte hard disk drive, sells for $14,995. Among other options, two additional 70M-byte drives can be added for $11,490. An internal 60M-byte streaming tape drive is a $2,595 option.

The Fortune:Link local-area network is based on Datapoint Corp.'s Arcnet design and can connect up to 255 32:16 systems, the company said. The controller board and networking software cost $1,795. A passive hub costs $175, and an active hub costs $1,295.

Fortune also announced communications products, including the 3270 SNA Emulator package, which emulates an IBM 3274 cluster controller, 3278 display terminal and 3287 printer. The package costs $1,195, and an Intelligent Communications Controller that acts as a Synchronous Data Link Control server costs $995. Additionally, the firm announced an implementation of the CCITT X.25 standard, with X.25 development software priced at $1,195.

Fortune:Windows, a window management package that supports up to eight active applications concurrently, is priced at $695. Extended Fortune:Word 2.1.2, an en-

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Puzzles, problems and 'solutions'

SMALL TALK
Eric Bender
CW Senior Editor

Two years ago the word was "support."

Manufacturers supported distributors that supported dealers that supported customers. In short, support was everywhere. If you closed your eyes, you could imagine yourself surrounded by undergarment sales representatives or a therapy group.

Not much of that support actually was visible, but it sounded good.

Today the word is "solutions," which new seems more familiar in the computer industry than in the chemicals business. Nobody except mail-order houses sell microcomputers and software anymore.

Those of us who buy micros don't go home and tell our friends what a great solution we just bought — no, we mention the IBM Personal Computer AT compatibility and the clock speed and all that good stuff — but the phrase is not quite meaningless.

Personal computing has seen a great deal of take-the-money-and-run action from everyone in the chain of distribution, which is one of the main reasons that hundreds of thousands of desktop micros are gathering dust. All those disappointed user expectations, in turn, represent one of the main reasons for the current industry slump.

Genuine solutions to the puzzles of using micros do exist. From the seller's side, they require some pixie dust and a lot of sweat in the system design and configuration, plus continued and teeth-gritting attention to detail — and a real willingness to listen to the user.

We in the trade press don't necessarily cover these points very well, for several reasons.

For one thing, "solution" can't be defined in a press release. The reasons a system actually works fall into the cracks between the company hype and the product specifications, along with all those hidden costs.

For another, a smooth operation doesn't necessarily make a good story, lacking the classic computer-bites-man slant.

And, of course, we're all off chasing technologies that won't have widespread payoffs until the 1990s — a perennial problem in trade journalism.

See SOLUTIONS page 72

Microsoft to back memory spec

By Kathleen Sullivan
CW West Coast Bureau

BELLEVUE, Wash. — Microsoft Corp. late last month said it was joining forces with Lotus Development Corp. and Intel Corp. in support of the Lotus/Intel Expanded Memory Specification. In its statement, Microsoft announced plans to integrate expanded memory capabilities into its future systems software products.

Introduced last spring, the expanded memory specification is an interface that allows the system memory of an IBM Personal Computer, Personal Computer XT or AT to be expanded up to 8M bytes above the 640K-byte memory limit.

In conjunction with the announcement, Intel released a new version of the specification.

Enhancements in Revision 3.2

The enhancements included in Revision 3.2 allow multitasking operating systems to support more easily multiple application programs sharing expanded memory, said Rich Bader, operation manager of Intel's Personal Computer Enhancement Operation.

According to Bader, Revision 3.2 will not affect current software development efforts by companies developing products that support expanded memory. The scheme will new be known as the Lotus/Intel/Microsoft Specification, he said.

When Lotus and Intel introduced the expanded memory scheme, Intel unveiled Above Board, an add-on board that supports the expanded memory scheme and also provides specialized support for applications software that adheres to the specification.

Other hardware vendors also have introduced memory products supporting the specification.

Lotus recently began shipping a new version of Symphony that takes advantage of the expanded memory scheme, as will a new version of its 1-2-3 package scheduled for release this fall.

Other software companies have indicated their support, including Ashton-Tate, whose upcoming release of Framework will support expanded memory, and Computer Associates International, Inc.'s Micro Products Division, formerly Sorcim/IUS, which has said its Supercalc 3 will adhere to the specification.

IBM micros get ISPF/PDF

RYE BROOK, N.Y. — As an aid to programmer productivity, IBM has announced a Personal Computer implementation of its mainframe Interactive System Productivity Facility/Program Development Facility (ISPF/PDF), called ISPF/PDF PC Editor.

The package enables programmers familiar with ISPF/PDF to develop mainframe applications on a Personal Computer. Most commands in ISPF/PDF PC Editor are the same as in ISPF/PDF, and the two programs have a consistent editor, the vendor said. ISPF/PDF PC Editor allows programmers to delete, repeat, move or modify sections or lines of code or elements within a line by typing the appropriate command.

Users can transfer files from the host system to the Personal Computer, use the ISPF/PDF PC Editor, then transfer the files back to the host for further processing, IBM said.

A prerequisite for ISPF/PDF PC Editor is EZ-VU Runtime Facility, which provides a conversational interface between the user and an application program.

ISPF/PDF PC Editor requires an IBM Personal Computer with a minimum of 256K bytes of memory. The product costs $150. EZ-VU Runtime Facility is priced at $55.

More information is available from IBM at 900 King St., Rye Brook, N.Y. 10573.

Communications drivers announced for Symphony

CAMBRIDGE, Mass. — Lotus Development Corp. has announced that it will develop two communications drivers for its Symphony integrated package for the IBM Personal Computer.

The drivers reportedly will be offered free to Symphony users. One will be developed for use with the Compuserve, Inc. information utility's B protocol; the other will be for use with Communications Research Group, Inc.'s Blocked Asynchronous Transmission (Blast) communications software.

The B protocol driver will aid file transfer between Symphony and Compuserve's World of Lotus bulletin board on Lotus-related news, Lotus said.

The Blast driver reportedly will permit users to communicate with other Blast users.

Both drivers reportedly will be distributed this fall on the World of Lotus.

The Blast driver will be distributed on request to Blast users by Communications Research Group, Lotus said.

Lotus is located at 55 Cambridge Pkwy., Cambridge, Mass. 02142.

Version 2 of Chart out

BELLEVUE, Wash. — Microsoft Corp. has announced Version 2 of its Chart business graphics program for the IBM Personal Computer and compatible machines. Enhancements to the product include increased output device support and direct links to Lotus Development Corp.'s 1-2-3 and Symphony spreadsheet packages.

Microsoft Chart, first introduced in 1984, allows users to select from among 45 predefined chart formats. Users can custom design charts by moving, sizing, reformatting, adding text, overlaying charts, adding arrows and positioning all elements of the chart. The enhanced version now supports up to 128 data points and eight statistical functions, including a function that allows users to combine more than one data series, the vendor said.

With the link function, Microsoft Chart 2 allows users to execute a built-in command and transfer data directly into Chart from 1-2-3, Symphony, Microsoft's Multiplan, Dbase or other programs that utilize WKS, Data Interchange Format or text files, the vendor said. Users can also select a permanent link between Chart and other programs to allow data that is changed in that program to be automatically updated in Chart, a spokesman said.

Version 2, scheduled to ship in September, will support IBM's Enhanced Graphics Adapter, which permits the use of 16 different colors on the screen. Support has also been added for a number of output devices, including Polaroid Corp.'s Palette image recorder, Hewlett-Packard Co.'s 7510 vector film recorder, Matrix Instruments, Inc. PCR/QCR digital film recorder, Lasergraphics' advanced micrographics system and General Parametrics Corp.'s Videoshow presentation system.

Microsoft Chart Version 2 requires a Personal Computer or compatible machine with 256K bytes of memory, one double-sided disk drive and the IBM EGA, Color/Graphics Monitor Adapter or the Hercules Computer Technology Graphics Card. Version 2 costs $295.

Microsoft can be reached through Box 97200, 10700 Northup Way, Bellevue, Wash., 98009.

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CONTROL DATA

Micro Focus boosts line with enhanced Cobol compiler

By Jeffry Hecker
CW West Coast Bureau

CHICAGO — Micro Focus, Inc. has added to its Cobol product line with the introduction of an enhanced compiler that reportedly out-performs the company's existing offerings by fivefold to tenfold and supports all the leading Cobol dialects.

Announced last month at the National Computer Conference here, VS Cobol is aimed at the same IBM-style microcomputer users as the other compilers in the Micro Focus product line.

VS Cobol executes code three times faster than the company's previous top-of-the-line compiler, High Performance Level II Cobol, according to Micro Focus sales manager Mike McCandless.

The latest addition to the firm's compiler family also compiles twice as fast as Level II, McCandless said.

Included in the product's repertoire of supported dialects are IBM's OS/VS Cobol and VS Cobol II, Micro Focus' Level II, plus Ansi 74 and Ansi 85 Cobol, according to the company's cofounder and technical executive, Stewart Lang.

In an interview, Lang characterized VS Cobol as one of the software components that form Micro Focus' existing Workbench product, which off-loads program development tasks from mainframes to IBM-style microcomputers.

Although VS Cobol can be acquired as part of the larger Workbench package, it is also available as a stand-alone offering for first-time Cobol users or for customers who would use it as a development utility, according to Lang.

VS Cobol costs $1,500.

Micro Focus is located at 2465 E. Bayshore Road, Palo Alto, Calif. 94303.

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Corona cuts prices

THOUSAND OAKS, Calif. — Corona Data Systems, Inc. has announced price cuts averaging 45% for its 400 series line of transportable and desktop IBM-compatible personal computers.

Two transportable micros, the PPC-400-22 and the PPC-400-XT, were reduced in price from $2,795 and $4,295, respectively, to $1,495 and $2,295. The desktop models PC-400-12, PC-400-22 and PC-400-HD2 were reduced to $1,345, $1,495 and $2,295, respectively. They had been priced at $2,445, $2,650 and $4,150.

The transportable versions each include 256K bytes of memory and a built-in 9-in. green phosphor display. The PPC-400-22 also includes two 360K-byte diskette drives, while the PPC-400-XT includes one 360K-byte diskette drive and one 10M-byte hard disk.

The desktop machines come with 256K bytes of memory but do not include a monitor. The PC-400-12 includes one 360K-byte diskette drive; the PC-400-22, two 360K-byte diskette drives; and the PC-400-HD2, one 360K-byte diskette drive and a 10M-byte hard disk. A monitor for use with any of the systems has been reduced in price from $245 to $200.

Corona Data Systems is located at 275 Hillcrest Drive, Thousand Oaks, Calif. 91360.

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Large firms ignoring IBM AT's multiuser capabilities

Poll finds preference for single-user service

By Edward Warner
CW Staff

ELLICOTT CITY, Md. — Most Fortune 1,000-size firms responding to a recent survey are using the IBM Personal Computer AT as a high-powered single-user machine and only rarely as a multiuser micro. This was the finding of a report on corporate microcomputer usage trends published by the Newton-Evans Research Co. here.

The report, based on the responses of 101 DP and MIS managers, also found a strong preference for IBM micros, including a laptop portable that exists only in rumors. Specifically, IBM was mentioned as the most important future supplier of desktop micros by 96% of respondents.

Though IBM does not currently market a laptop portable personal computer, nearly 60% of respondents said they were looking to IBM to be their most important vendor of laptops in the future. Data General Corp., manufacturer of the Data General/One IBM-compatible laptop, placed second with a 50% mention rate.

According to Newton-Evans, the survey's questionnaires were mailed to 982 potential respondents and 101 actually responded. The largest group of respondents (36%) worked for firms with annual revenues of $1 billion to $2.4 billion. Thirty-two percent worked for firms with between 5,000 and 9,999 employees. Though 38% of the respondents were from industrial firms, Newton-Evans Research said the next largest group (28%) was from the financial industry and included 16 large banks and 10 insurance companies.

Half of the respondents reported more than 100 personal computers in use in their firms, and 20% of that group said they expected their firms to have more than 100 personal computers by the year's end. Ninety-eight percent of the respondents' firms had at least one IBM Personal Computer installed.

AT&T made strong showing

While IBM was picked by most respondents as their most important future desktop computer vendor, AT&T made a surprisingly strong showing by capturing second place with a 51% mention rate from respondents.

IBM's grip on the Fortune 1,000 market, however, was more strongly emphasized by the report's finding that a full 41% of respondents plan to buy personal computers from no mini or mainframe computer vendor other than Big Blue.

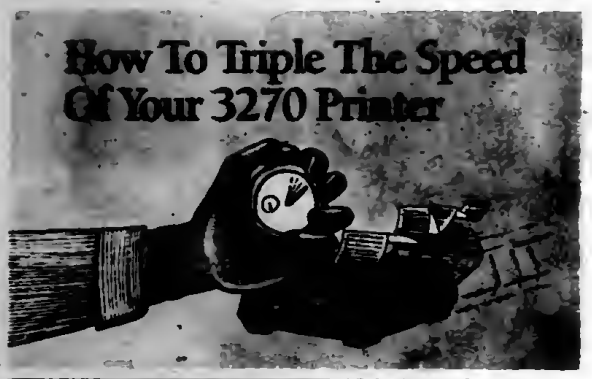
Of the IBM line of micros, the Personal Computer AT was the machine respondents said would be their most likely choice to buy at any time from 1985 to 1987. According to the report, 84% of respondents planned to purchase an AT during that period.

Ninety percent of the report's respondents said their firms' ATs are not currently being used nor will they be used as multiuser machines. Overall, the report said, only one-quarter of respondents have multiuser personal computer systems from any vendor, and, of those, 28% use their systems less than 30 minutes a day.

The means by which micros are acquired and disseminated in the respondents' corporations was also explored by the report.

The report found that 67% currently use an information center to educate end users. Respondents divided almost evenly, however, as to whether a formal request for proposal is required before the firm can purchase a micro.

The report, titled "Microcomputer Usage Trends in Fortune 1,000 Corporations, 1985 Edition," is priced at $750 and is available from Newton-Evans Research, Suite 204, Bethany 40 Center, 10176 Baltimore National Pike, Ellicott City, Md. 21043.



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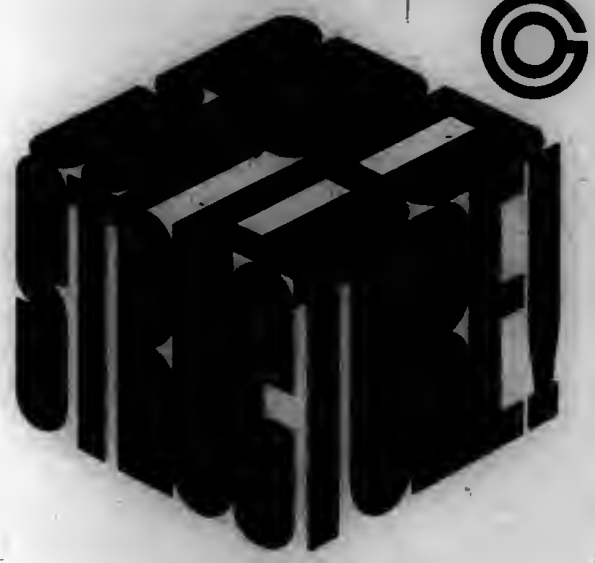

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Mapper package debuts for Sperry, IBM micros

ST. PAUL DE VENCE, France — Sperry Ltd.'s Information Systems Group, a unit of Sperry Corp., last month announced that its Mapper applications development system is available for use on certain Sperry and IBM microcomputers.

The product, called the Personal Mapper System (PMS), is a $2,000 hardware and software package that includes a micro version of the Mapper software used on Sperry 1100 series mainframes, officials said at a press briefing here.

PMS is a package of nine software diskettes and a standard expansion board, for use on any hard-disk model of the Sperry Personal Computer or the IBM Personal Computer XT, the vendor said.

Mapper software is designed to enable end users to develop, control and maintain forms-oriented applications programs using English language commands, the vendor said.

The PMS expansion board has a Motorola, Inc. MC68010 processor as well as a virtual-memory management unit.

More information is available from Sperry through P.O. Box 2191, Princeton, N.J. 08540.

Novell announces system software for IBM network

OREM, Utah — Novell, Inc. has introduced Advanced Netware/PCN, operating system software said to provide the features of the firm's Advanced Netware software designed for networks based on the IBM PC Network.

Advanced Netware/PCN is compatible with IBM's PC-DOS 2, 2.1, 3 and 3.1, according to a Novell spokesman. The software supports multiple file servers and Netware Bridges, which permit communications between networks with different hardware configurations, according to the vendor.

A Netware Remote feature allows remote workstations to connect via modem to an Advanced Netware/PCN network and function as fully networked workstations.

The Netware Electronic Mail Systems software also is included, according to the company.

Advanced Netware/PCN is available immediately for $1,595. A version that includes a disk interface for use with a Netware disk subsystem is priced at $1,845.

More information is available from Novell at 1170 N. Industrial Park Drive, Orem, Utah 84057.

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Firm releases upgraded drives for IBM Personal Computer

BILLERICA, Mass. — Ideassociates, Inc. has added internal 40M-, 70M- and 120M-byte disk drives to its line of IBM Personal Computer storage units.

Because of limitations in IBM's PC-DOS operating system, an IBM disk controller cannot support more than 32M bytes of storage. The larger capacity drives come preformatted into multiple segments supported by Ideassociates' software. With the product, larger capacity disks can be partitioned into multiple PC-DOS drives, according to a vendor spokesman.

The products supply self-booting and disk cache features. Prices for the drives range from $1,595 to $9,995.

Ideassociates is located at 35 Dunham Road, Billerica, Mass. 01821.

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FORTUNE from page 61

hanced version of the vendor's word processing software that works with Fortune:Windows, debuted with a $1,495 price tag.

Fortune also introduced a monochrome graphics coprocessor board that supports 800- by 500-pixel displays and costs $1,995. A Tektronix, Inc. 401X emulator that works with the board is priced at $795. In addition, the company announced that it has adopted Graphics Software Systems' Virtual Device Interface, offering several development packages that allow users to run device-independent graphics packages. Graphics Software Systems' Drivers software will cost $295.

Release 1.8 of the For:Pro operating system was also announced. The package, available as a $150 upgrade for current multiuser Fortune customers, reportedly improves disk I/O performance and includes For:Prog, a hard disk drive optimization program.

Several CPU upgrade kits for current Fortune installations are available, with prices beginning at $2,995. Substantial price cuts for existing 32:16 systems also were disclosed, with the cost of a standard XP45 dropping from $14,995 to $9,995.

Additionally, new releases of Microsoft Corp.'s Multiplan and Graphic Communications, Inc.'s Graphwriter were announced, selling for $295 and $495, respectively, along with several other third-party software packages.

Additional information is available from Fortune, which is located at 101 Twin Dolphin Drive, Redwood City, Calif. 94065.

Fortune redirects strategy

NEW YORK — Today's Fortune Systems Corp. is a slimmed-down version of the firm that exceeded $20 million in sales in first-quarter 1983. The firm posted revenue of $14.6 million for the quarter ended this June 30.

Interviewed here two weeks ago, Fortune Chairman and Chief Executive Officer James Campbell emphasized the latest quarter's $220,000 profit. He also noted that the Redwood City, Calif., office automation vendor has maintained a 7:1 asset-to-liability ratio.

Downsizing the company to reach a level where it becomes profitable represents a shift of approach. Last summer Fortune moved toward buying North Star Computers, Inc., and "the strategy was that size is good," Campbell said. But, "I don't believe any more that putting together a $50-million company and a $70-million company makes any difference," he said. "A $120-million company doesn't have any more survivability."

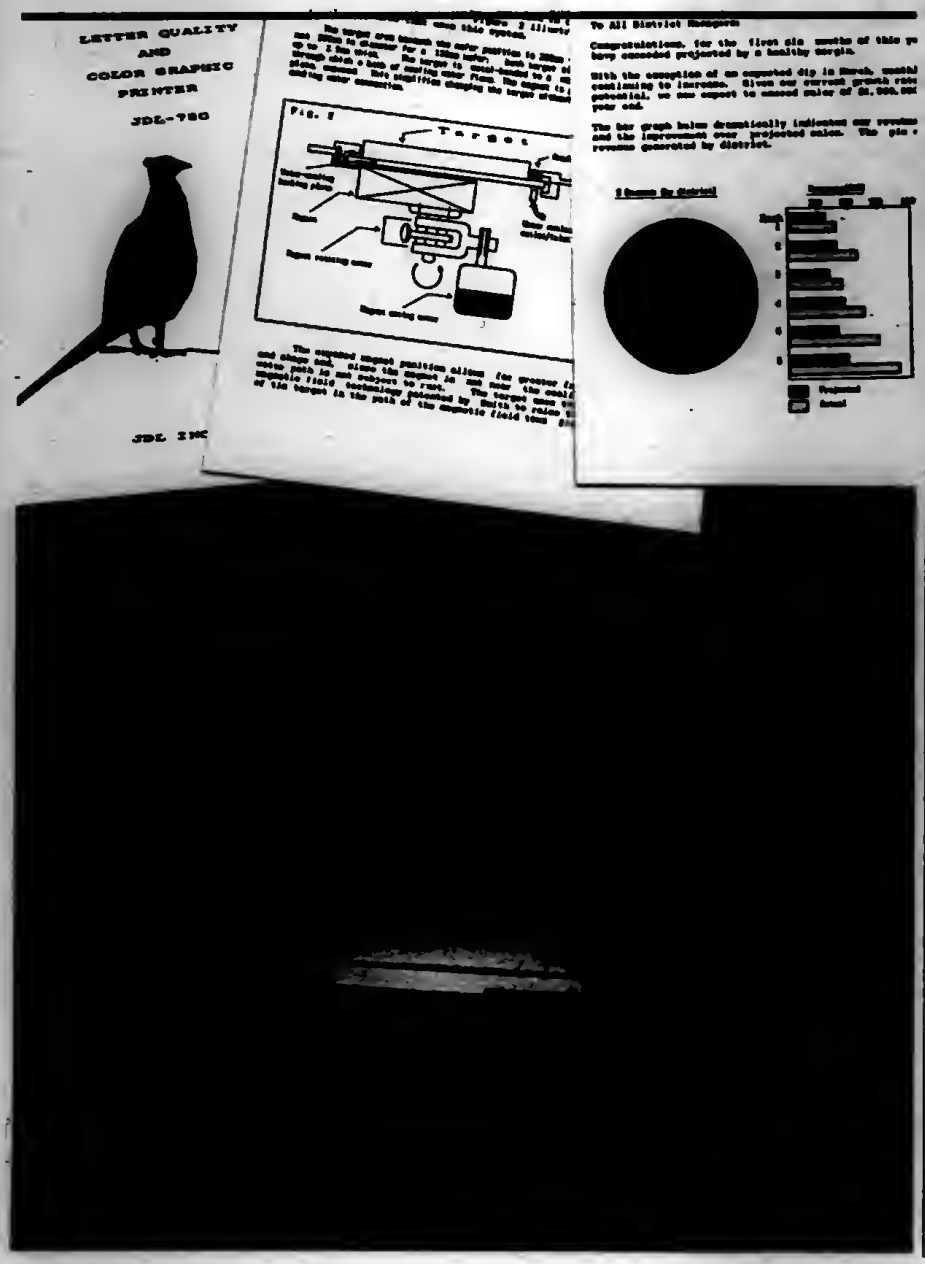
Fortune now has completed the pruning required to maintain itself in healthy financial shape, Campbell said. Employment, which once reached 700, has stabilized at 330 since April, and the company has promised its employees that no more layoffs will occur this year.

The company competes in two main market arenas: multiuser AT&T Unix machines and corporate markets. In the latter, Fortune concentrates on the automotive and communications industry, which limits overall opportunities but "gives us a better win record," Campbell said.

Fortune intends to move further into the academic market. "There's a big push in the universities for Unix and C," according to Fortune Marketing Vice-President Richard Siegel.

Sales to federal agencies, which may sign very large contracts, also hold a great deal of promise, Campbell added.

— Eric Bender



SOLUTIONS from page 61

Twenty-five years ago ocean development was high technology, and everyone and his brother was busily building little submarines or other fancy undersea toys. No one was quite sure how the equipment would pay for itself. Eventually, to most people's surprise, the offshore oil industry emerged to pay the bills for the surviving vendors.

Twenty years ago firms were rushing out to buy the first commercial lasers. Those were tricky and low-power devices, and many customers found that, for a mundane task like cutting Styrofoam blocks, the devices primarily represented a fiendishly clever way of boosting the electricity bill. Over time, other firms did find important roles for lasers in manufacturing, medicine, telecommunications and other areas.

In both of these examples, the technologies received a huge amount of publicity, and multibillion-dollar markets emerged, but the lead time for a lot of practical applications was years longer than expected.

Currently in the information processing world, artificial intelligence and other emerging technologies such as image transmission and optical storage receive tremendous attention, far more than the prospects for broad, near-term acceptance conceivably could justify.

We in the press spend a lot of time writing about them because they're intriguing, and we tend to ignore the time lag between a technological achievement and useful applications of the technology. One quick example is that sales haven't risen above the noise level for any single-user software specifically tailored for the Personal Computer AT. (Please, no vendor letters.)

And often the trade press is part of the problem, not part of the solution.

COMMUNICATIONS

WEEK TAP/DANIEL MINOLI

Network documentation high priority

Documentation is generally given low priority in data communications project development efforts. While software engineering has formally introduced a documentation phase into project management and has even produced some automated tools for the task, data communications lags behind in this area.

Lack of documentation can lead to serious operational problems and, more importantly, to unnecessary expenditures, possibly totaling hundreds of thousands of dollars a year for a medium to large Fortune 500 corporation.

A previous column addressed installation delays resulting from lack of appropriate documentation [CW, July 29]. Two other considerations are communications resource management and network operation.

Accurate record keeping is essential in all companies. Studies show that telephone bills are often fraught with errors. The carriers, for example, continue to bill long-haul circuits that should have been canceled years earlier. Other typical problems involve telephone station equipment, extensions, off-premise extension facilities, special services and local loops no longer in service. These domestic and international line charges quickly add up.

So, review of toll bills normally yields savings. Often, the tracking systems needed to keep a handle on inventories and spending can pay for themselves in a short period. In one situation, a carrier was leasing over 3,000 international circuits from several other carriers and a corresponding number of entrance facilities from dozens of other domestic carriers. The yearly cost of the facilities was close to $60 million.

The record-keeping system developed for this firm was easily justified: If it identified billing errors that accounted for 0.5% of the budget, it would more than pay for itself in a single year. A 2% to 4% savings is not atypical; in the above case that would translate to $1 million and $2 million a year savings, respectively.

This type of billing review should not be carried out ad hoc — once every several years. Automated systems should be developed by the users to study communications bills on a monthly basis.

Documentation can often help expedite operational issues such as problem resolution. Sometimes, only one individual understands the network. When that person is ill or taking a vacation, no one else can solve a problem.

Network documentation can prevent these problems. Some sophisticated installations may develop a system that uses graphics in conjunction with a facilities data base to provide on-line, scrollable and navigable circuit schematics.

A multiaccess service and facilities data base that is consulted and updated by individuals who monitor the status of the network (add, delete, move, fix or upgrade) is desirable.

For an organization that does not have this capability, it would be advisable to subcontract software development and to add temporary consultants to assemble and enter the data.

The billing inconsistencies discovered by this one-time, start-up exercise would probably pay for the temporary manpower in a matter of months.

Minoli is an associate vice-president, systems planning and engineering, of Prudential-Bache Securities, Inc. in New York.

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■ Astrocom Corp. has added a coaxial multiplexer to its product line/76

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AT&T losing control of declining PBX market

Northern Telecom, NEC Telephones gain significantly, report states

NEW YORK — AT&T, once the undisputed leader in the private branch exchange market, has seen its hold on the first-place position become more tenuous recently. Northern Business Information, Inc. made that claim in "PBX Market," a 120-page report that compares PBX sales figures from 1983 and 1984. In 1984, AT&T's market share fell from 26.5% to 19.6% while Northern Telecom, Inc.'s rose from 15.9% to 19.5%.

The two giants were competing for a market that is not growing as rapidly as it has been, according to the report. In 1983, the PBX market grew by 23%, but in 1984 it increased by 18.5%, the report showed.

Another significant finding was that NEC Telephones, Inc. doubled its market share with the introduction of its latest PBX, climbing to the fifth spot behind Rolm Corp. and Mitel, Inc.

Although they are unable to manufacture PBXs, the regional operating companies played an important role. By reselling other companies' equipment, the divested Bell operating companies distributed more than 6% of the PBXs sold in 1984.

Supplier	1983	1984	% Change (by Units)
Northern Telecom, Inc.	15.9	19.5	45.0
Mitel Corp.	10.5	9.7	8.9
Others	29.3	26.8	16.4

The report costs $1,475.

Northern Business is located at 157 Chambers St., New York, N.Y. 10007.

Micom's nonblocking data private branch exchange out

SIMI VALLEY, Calif. — Micom Systems, Inc. has announced a nonblocking data private branch exchange that works with twisted-pair wiring and accomodates up to 1,016 full-duplex channels operating at speeds of up to 19.2K bit/sec.

The Instanet6000 Data PBX offers options that include interfaces for four to eight independent channels, local multiplexers supporting up to 128 devices over twisted-pair wiring, gateways for accessing IBM Systems Network Architecture/Synchronous Data Link Control or Binary Synchronous Communications networks, X.25 packet-switched networks and integral statistical multiplexers to link remote clusters of terminals or ports over a single telephone line.

System administrators can restrict access and enforce security in a variety of ways. All devices that initiate calls are assigned a list of resources that they can access, and passwords can be used to restrict access. For such password, the system administrator specifies how many attempts are allowed before the Instanet6000 Data PBX denies access and reports an attempted security violation.

System administrators configure and control the Instanet6000 Data PBX through its administration port. From a terminal connected to the administration port, the network manager can define access rights for terminals, assign names to resources, enter messages and bulletins and check network status.

Instanet6000 Data PBX pricing starts at $7,500 or $12,000 with redundancy. Interface prices range from $245 to $650 for four-channel modules, $650 to $750 for eight-channel cards, $650 to $1,500 for local multiplexers capable of supporting from four to 128 channels, $2,500 to $4,200 for statistical multiplexer modules and X.25 packet assembler/disassemblers and $3,600 to $5,400 for IBM Gateway modules. A configuration supporting 376 local terminals and ports costs $40,500.

Micom is located at 4100 Los Angeles Ave., Simi Valley, Calif. 93063.

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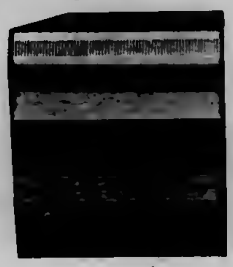

Calm down. Dust yourself off. Then call: 800-345-4636.

INFOTRON SYSTEMS

Source data base supports speeds up to 2,400 bit/sec.

Several hundred more cities to gain access

MCLEAN, Va. — Source Telecomputing Corp. has announced 2,400 bit/sec. transmission speed support for the Source, its on-line data base service.

Prime-time usage of the 2,400 bit/sec. service is priced at 46 cent/min, 3 cents more than 1,200 bit/sec. usage. Non-prime-time use, which includes evenings after 6 p.m., weekends and holidays, will be approximately 20 cent/min, 2 cents higher than 1,200 bit/sec. prices.

Uninet, Inc. will provide service access at the higher rate to 10 cities including Los Angeles; San Francisco; Washington, D.C.; Atlanta; Chicago; Boston; Kansas City, Mo.; New York; Dallas; and Houston.

Service access will be expanded to several hundred additional cities, the company claimed, using Uninet and GTE Telenet Communications Corp.

Additional information is available from Source Telecomputing, which is located at 1616 Anderson Road, McLean, Va. 22102.

PROTOCOL CONVERTERS

■ Local Data, Inc. has announced the Barelynx/3287 protocol conversion board, which allows an industry-standard Ascii printer or comparable device to be attached to an IBM Type A coaxial device.

With Barelynx, an Ascii printer appears to the control unit as an IBM 3287 character printer. Barelynx may be used with all models and configurations of IBM 3274 and 3276 control units, a spokesman said.

A Barelynx/3287 board includes serial and parallel printer interfaces supporting a variety of interfaces. The Barelynx/3287 includes a single 10¼- by 12.7-in. printed-circuit board suitable for internal mounting.

The Barelynx/3287 is priced at $949. A portable front panel for configuring and troubleshooting a Barelynx board costs $500.

Local Data, 3771 Toledo St., Torrance, Calif. 90503.

MULTIPLEXERS/ MODEMS

■ Astrocom Corp. has added a coaxial multiplexer to its Synoptiplexer product line for IBM 3274 users.

The Astrocom E299 supports up to eight IBM Category A or compatible terminals or printers at distances up to 10,000 ft from a controller through the use of one coaxial cable instead of eight conventional cables.

The device can be used in multidrop and star network configurations and includes individual channel diagnostic fault/status indicator lights.

The E299 is priced at $795.

Astrocom, 120 W. Plato Blvd., St. Paul, Minn. 55107.

■ Gandalf Data, Inc. has announced two products for use with its GLM 528 T1 time-division multiplexer, a channel card for synchronous data transmission and a clock controller card.

The channel card enables the GLM 528 to handle synchronous data at speeds up to 64K bit/sec. and/or asynchronous data at up to 19.2K bit/sec. In addition, a controller card provides clocking to Gandalf Pacx 1000 and Pacx 2000 data-switching nodes, enabling the GLM 528 to be synchronized to these Pacx nodes for networking applications.

The existing GLM 528 multiplexers can be expanded with an asynchronous, data-only 32-channel card priced at $1,490 or with the synchronous/asynchronous 32-channel card at $1,790, the vendor said.

A basic 32-channel synchronous/asynchronous GLM 528 multiplexer is priced at $3,540, $300 more than the asynchronous-only model.

Gandalf, 1020 S. Noel, Wheeling, Ill. 60090.

LOCAL-AREA NETWORKS

■ Cabletron has announced the LAN-MD, a tool for testing components of any Ethernet and IEEE 802.3-type local network.

The LAN-MD, when used with the previously announced TDR 5000 time domain reflectometer, tests the integrity of coaxial cable on broadband and baseband local nets, including the cabling, transceivers, multiple transceivers, transceiver cables, repeaters, terminators and connectors.

The products reportedly let installers and maintenance personnel isolate faults on an Ethernet local-area network within one hour.

The LAN-MD tests Ethernet version 1, 2 and IEEE 802.3 transceiver cables over a 500-ft maximum cable length. Tests can be conducted for proper transmit, receive, collision detection, power supply, fault protection and network signal strength.

The combined cost of the TDR 5000 and the LAN-MD is $8,500, the vendor said. The LAN-MD by itself is priced at $4,000.

Cabletron, 198 Pleasant St., Ashland, Mass. 01720.

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SYSTEMS & PERIPHERALS

Honeywell beefs up DPS 6 mini line

By Tom Hustad
CW Senior Editor

WALTHAM, Mass. — Honeywell, Inc. beefed up its DPS 6 line of minicomputers with the DPS 6/70, a processor with roughly the same performance as the firm's high-end DPS 6/75 system but offering twice as much main memory. Honeywell also unveiled a mass storage subsystem for the smaller DPS 6/22 mini.

The DPS 6/70 uses 256K-bit memory chips and comes in a cabinet half the size of that of the 60-in. DPS 6/75. It is not, however, a replacement for the DPS 6/75. A spokesman said the DPS 6/75 is field upgradable to the company's larger 32-bit DPS 6/85 and DPS 6/95 processors, while the DPS 6/70 is not.

The DPS 6/70 includes 2M bytes of main memory, 8K bytes of cache memory, a commercial instruction processor geared for enhancing Cobol performance, a 16-line communications controller with a maximum of 32 communications lines, four RS-422 ports, a disk controller that can support a 64M-byte, ¼-in. cartridge tape subsystem, a 650K-byte, 5¼-in. diskette drive and a system control facility for performing remote diagnostics and installing software updates, the company said.

Required options include either 132M-byte or 412M-byte fixed-media disk drives, which can provide a maximum of 3.3G bytes of disk storage. Other requirements include a removable-media storage device, such as a ¼-in. removable-media tape drive, a ½-in. tape drive or a removable- media disk drive, the company said.

The DPS 6/70 central system has three chassis slots that can be used for several options, including a second 16-line communications controller, a second disk controller, a multiple device controller to support attachment of high-speed line printers, a scientific instruction processor, a 9-track tape controller and up to two tape drives and a magnetic ink character recognition document handler, the company said.

The DPS 6/70 will be available in September at a base price of $30,500.

The 132M-byte fixed disk drive and 412M-byte fixed disk subsystems cost $14,500 and $21,000, respectively. The ¼-in., 9-track tape controller and primary drive cost $23,900. The second tape drive costs $17,900, the company said.

Honeywell also announced a fixed-disk mass storage subsystem for the DPS 6/22. The addition increases the disk storage capacity of the DPS 6/22 from 56M to 136M bytes.

A DPS 6/22 processor configured with the newly announced mass storage subsystem includes a CPU board with memory controller, 1M byte of main memory expandable to 1.8M bytes, up to two 68M-byte fixed-media disk drives, a 650K-byte 5¼-in. diskette drive and five workstation ports. One chassis slot is available for attachment of optional devices such as a second five-port workstation/printer controller, an asychronous/synchronous dual-line communications controller or a single-line IBM High-Level Data Link Control/Synchronous Data Link Control communications controller (HDLC/SDLC).

The base price for the DPS 6/22 is

See HONEY page 85

Tandem workstations, controller, emulator out

CUPERTINO, Calif. — Tandem Computers, Inc. announced two color workstations, a cluster controller and an enhanced version of its IBM 3270 emulator for the company's line of fault-tolerant transaction processing systems.

The Dynamite workstations can operate either as system terminals or as stand-alone microcomputers using Microsoft, Corp.'s MS-DOS operating system. Both models support a dual-mode monitor that can display both text and graphics data simultaneously. An optional bit-mapped graphics card can support three screen resolutions; a 300- by 320-pixel format, a medium resolution of 640 by 200 pixels and an 800- by 300-pixel resolution for graphics applications. The terminals feature all the standard features of other Dynamite series terminals, the company said.

The Dynamite 6548 workstation comes with dual-360K-byte floppy disk drives, and the Dynamite 6549 comes with one 360K-floppy disk drive and a 10M-byte hard disk drive. Both models come with 14-in. screens, 256K bytes of random-access memory expandable to 640K bytes and the ability to run Tandem 6530 series terminal software. The Dynamite 6548 workstation costs $3,790 and the 6549 costs $4,790. Existing users of Dynamite workstations can upgrade their units to support color monitors for $995. The optional graphics board costs $575, according to the company.

Tandem also announced the 6600 cluster controller. The unit allows clustering of terminals, which is said to reduce communications costs. The 6600 controls communications between a Tandem host processor and up to eight terminals, workstations or IBM Personal Computers and one printer. The unit can support any combination of Tandem 6530 series terminals or Dynamite series workstations, IBM Personal Computers or compatible microcomputers. The 6600 costs $3,450 for a four-port configuration. An eight-port version costs $4,250, the company said. The company also enhanced its EM3270 emula-

See TANDY page 85

■ Cadmus threw its hat into the crowding 68020 ring with an engineering workstation/78

■ Versatec unveiled two electrostatic color plotters and a graphics controller/78

■ AMF Logic Sciences announced a graphics processor for computer-aided design applications/83

■ System Industries, Inc. introduced Winchester disk drives for DEC, DG and HP minis/83

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Hitachi adds storage unit

SAN BRUNO, Calif. — Hitachi America Ltd. has announced an optical disk storage product that can store up to 83G bytes of data. The OL301-2 optical disk library system costs $45,000 and is initially available only to OEMs, the company said.

The OL301-2 disk library unit was built around the 301 series optical disk drive, a write-once storage product that is said to be compatible with a variety of CPUs via either the IEEE 488 general-purpose interface bus or Small Computer Systems, Inc. (SCSI) interface buses. Included in the library unit is a formatter controller, one or two disk units and an automatic disk changer.

The optical disk library unit will be used primarily for archival applications, a spokesman said.

More information can be obtained from Hitachi at the Peripheral Systems Marketing Department, 950 Elm Ave., San Bruno, Calif. 94066.

Ramtek unwraps CAD workstations

By Maura McEnaney
CW Staff

SANTA CLARA, Calif. — Ramtek Corp. has introduced a series of workstations for two- and three-dimensional computer-aided design applications.

The 2020-4228 desk-side unit is a Tektronix, Inc. graphics-compatible, design engineering color graphics workstation said to shorten the development time of 3-D CAD projects. It supports 3-D wireframe and finite element modeling applications using Tektronix-compatible graphics, the Graphics Kernel System and Ramtek graphics with Digital Equipment Corp.'s VT100 alphanumerics, the vendor said.

The 2020-4228 contains a Motorola, Inc., MC68010-based board that performs internal processing. It also contains a 2020 series Motorola 68000-based display list processor board for performing floating-point coordinate transformation and floating-point geometry computation functions. According to the vendor, 750K bytes of random-access memory, expandable in 1M-byte increments up to 5M bytes, allows the user to store Ramtek 3-D graphics display

See CAD page 85

Silicon Graphics Iris 2400 Turbo Option debuts

MOUNTAIN VIEW, Calif. — Silicon Graphics, Inc. has announced an enhanced version of its Iris Series 2000 graphics workstations, dubbed the Iris 2400 Turbo Option, based on the Motorola, Inc. 68020 microprocessor.

The Iris 2400 Turbo Option comes with 2M bytes to 4M bytes of memory and an optional floating-point processor board. The 2400 Turbo Option includes a software upgrade for faster file handling and very large-scale integration (VLSI) geometry engines that increase three-dimensional transformations by 33% — to 80,000 per second — over the Iris 2400, according to the vendor.

The Turbo Option's CPU uses a 32-bit data path to memory, and the memory boards use 256K-byte random-access memory chips.

The product's software upgrade requires no source code changes from the company's AT&T Unix 2.3 release, and it is based on the University of California at Berkeley's 4.2 version of Unix. The 240 Turbo Option, including CPU board and 2M-

See TURBO page 85

Versatec unveils color plotters, graphics controller

RPM can handle more than 15,000 vector/sec.

SANTA CLARA, Calif. — Versatec, Inc. has announced two electrostatic color plotters for 24-in. and 36-in. wide media and a modular graphics processing controller called the Raster Plotting Machine (RPM).

The RPM controller drives the newly announced electrostatic plotters, off-loads the host processor and orders and rasterizes graphics data. The RPM can handle more than 15,000 vector/sec., according to the vendor.

Up to 4M bytes of dual-ported memory per modular board is said to increase bandwidth and prevent contention.

Upgraded with add-in processors

The modular RPM series can be upgraded with add-in processors and memory up to 14M bytes. Disk drive storage can be expanded to 140M bytes.

The RPM controllers cost from $16,000.

The color plotters operate at up to 1 in./sec. with a resolution of 200 point/in. on paper or film. The 24-in. model can plot a D-size color drawing in 5¼ minutes. The 36-in. model can plot an E-size color drawing in 6½ minutes, the vendor said.

The plotters use a multipass technique to produce multicolor plots, eliminating the need for multiple writing heads and associated electronics, the vendor said. The color plotting software provides for seven line colors and 256 predefined area colors.

The 24-in. plotter costs $49,800, and the 36-in. model costs $72,200.

An enhanced accuracy option for the company's 7000 series of monochrome electrostatic plotters is also available.

The option reportedly makes adjustments for changes in the media and humidity. Adjustments are self-calibrated on the plotter through the control panel. The option is priced at $4,900, according to the vendor.

An automatic media cutter for the 7000 series is said to eliminate the need for a manual operator to cut plots.

Automatically deposited in bin

Once the plots are cut by the cutter and mounted on top of the plotter in place of the media winder, they are automatically deposited into a wire bin.

Cuts are initiated at the end of a plot or through a special command and are made within a ¼ in. of the desired area. The cutter is available for $3,750.

Versatec is located at 2710 Walsh Ave., Santa Clara, Calif. 95051.

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ITT processor targets IBM 3270, PBX users

PHOENIX — ITT Courier Terminal Systems, Inc. has introduced an applications processor system for local processing targeted at users of IBM 3270 workstations and voice/data private branch exchanges.

The ITT applications processor is said to give terminal users the option of communicating on-line with the 3270 host computer or accessing the local processing power of the applications processor.

The product connects to an IBM host computer via an ITT 9400 series controller and can provide port connections for up to 32 terminals and printers from the ITT 9000 product line. According to the vendor, up to 16 devices can simultaneously access Microsoft Corp. Xenix-based applications.

Users of the 3270 can log on to the applications processor and toggle back and forth between local applications and a mainframe 3270 session.

The applications processor includes an Intel Corp. 80286-based CPU board, ISBC 214 intelligent I/O board, 1M byte of directly addressable random-access memory expandable to 13M bytes and up to 300M bytes of storage. The unit can include a 1.2M-byte floppy disk drive, 60M-byte streaming tape drive, four 5¼-in. hard disk drives, 12 Multibus boards, a Centronics Data Computer Corp.-compatible parallel printer port and an RS-232C asynchronous terminal port.

Model I of the applications processor costs $18,500 and includes a 20M-byte fixed disk drive. Model II costs $24,000 and includes a 60M-byte fixed disk drive and a 60M-byte tape streamer. Both come standard with the Xenix 286 operating system, a 1.2M-byte floppy disk drive, a Centronics-compatible parallel printer port, an RS-232C asynchronous terminal port and a device adapter that supports eight coaxial attached devices.

ITT Courier Terminal Systems is located at 1515 West 14th St., Tempe, Ariz. 85281.

Cadmus unit gets upgrade

LOWELL, Mass. — Cadmus Computer Systems has announced a version of its OEM-oriented engineering workstation that incorporates a Motorola, Inc. 68020 microprocessor.

The Cadmus 9800 uses the 16.7-MHz version of the 68020 said to offer a 300% performance improvement over earlier workstations based on Motorola's 68010 chip.

The Cadmus 9800, including 1M byte of random-access memory, memory management unit, small computer systems interface and VME interface, a 40M-byte Winchester disk drive and controller, a 5¼-in. floppy disk drive and controller, the company's Cadmac graphics subsystem, a VME card cage with 10 slots, two RS-232C communications lines, and AT&T's Unix System V operating system costs $21,500. Deliveries will begin in the fourth quarter.

The company is located at 600 Suffolk St., Lowell, Mass. 01852.

You could win $1000 in the first international computer-generated art contest

CW Communications, Inc. — the world's leading publisher of computer-related newspapers and magazines — is proud to announce its sponsorship of the very first international computer-generated art contest.

All entries must be computer-generated, mounted, and suitable for display. Entries will be judged primarily on their artistic merit, but execution will also be taken into account. Two prizes will be awarded. The winning individual will receive $1,000 (U.S.). The winning organization will receive a trophy.

Winners will be announced during the First Pan Pacific Computer Conference (in Melbourne, Australia, this September 10-13). All entries will be put on display in a special exhibit at this conference.

Enter today. Send your entry to:
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Entries must be received by August 23rd

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We started with competitive word processing in virtually every area and developed superiority in the crucial area of file management.

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No word processing vendor can integrate the extensive array of data processing products you'll find with The Honeywell Office.

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[redacted]

*Over [redacted] installations.

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Integrated Networking and Communications

Honeywell expertise in networking and communications helped the Metropolitan Life Insurance Company create one of the largest distributed branch office networks of its kind.

Over 1300 Met Life district sales offices in North America are automated using our DPS 6 minicomputers, linked through an SNA network that supplies reliable branch office-to-IBM host communications.

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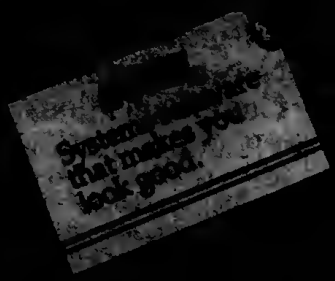
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SYSTEMS & PERIPHERALS

PROCESSORS

■ AMF Logic Sciences has introduced a vector-to-raster graphics processor that converts graphics data supplied by a host computer into a format that can be output to a variety of ink-jet, electrostatic and laser printers and plotters.

Turbograph 700 is a stand-alone processor for processing either monochromatic or color graphics data. It includes a very large-scale integration graphics engine and user-configurable I/O options. It can draw up to 400,000 vector/sec., the vendor said.

Geared for computer-aided design, manufacturing and engineering applications, Turbograph 700 allows users to define graphics elements for custom-tailored output. Shaded areas can be filled with patterns selected by the user.

Raster image memory and input memory are expandable to up to 2M bytes each. Optional interfaces include the RS-232C 9.6K bit/sec. serial interface and the Centronics Data Computer Corp. 8-bit parallel interface, the vendor said.

Turbograph 700 costs $6,995.

AMF Logic Sciences, 10608 Fallstone Road, Houston, Texas 77099.

DATA STORAGE

■ System Industries, Inc. has announced Winchester disk drives for Digital Equipment Corp., Data General Corp. and Hewlett-Packard Co. minicomputers.

The 9733 offers a transfer rate of 2.458M byte/sec., a 28.3-msec average access time and 337M bytes of unformatted capacity. The 9733 can be used within a System Industries cluster that supports a number of drives, allowing multiple CPUs to access a large common data base.

The 9733 is priced at $10,100, including all hardware and cables needed.

System Industries, 1855 Barber Lane, Milpitas, Calif. 95035.

TERMINALS

■ Ann Arbor Terminals, Inc. has announced an Ansi X3.64 standard alphanumeric and graphics terminal that is said to be compatible with the Tektronix, Inc. 4010 and 4014 with enhancements of the Digital Equipment Corp. VT640.

The Ambassador GXL Plus adds a user-definable character set to the previous capabilities of the GXL. Characters can be preset with graphics instructions, including alternate fonts, schematic symbols or layers of graphics displays.

The terminal includes a 15-in. green phosphor screen with 768- by 600-pixel resolution.

The standard configuration features 18- to 60-line by 80-char. display, two pages of memory, editing capabilities and transmission speeds of 110 to 19.2K bit/sec., according to the vendor.

The product reportedly supports graphics packages such as Tektronix Plot-10, Isaco Graphics' Disspla and Tell-A-Graph and SAS Institute, Inc.'s SAS/Graph.

Cost of the GXL Plus is $3,950.

Ann Arbor Terminals, 6175 Jackson Road, Ann Arbor, Mich. 48103.

■ Falco Data Products, Inc. has released its Fame 1078 terminal designed for use in local-area network and protocol converter systems.

The Fame 1078 features an IBM-style keyboard, Digital Equipment Corp. VT102, VT100 and VT52 terminal emulation and IBM 3278 compatibility through the use of a protocol converter.

DEC's PF keys one through four are included. The unit features two pages of memory, 24 shiftable PF keys, double-width, double-height characters and a 14-in. screen. Split-screen operation is said to be standard, as are a pair of independently configured RS-232C communication ports.

It costs $1,095.

Falco Data Products, 1266 Lawrence Station Road, Sunnyvale, Calif. 94089.

■ CIE Terminals, Inc. has introduced an enhanced keyboard for its Digital Equipment Corp. VT220-compatible CIT-220+ monochrome terminal.

The keyboard includes Escape, Backspace and Linefeed keys that allow users to execute special functions in applications programs, editors and operating systems, the vendor said. The keys are also functional in the terminal's VT52, VT100 and VT220 operating modes.

CIE's keyboard includes a Shift-lock LED. The keyboard will be shipped with all CIT-220+ terminals, which are priced at $995.

CIE Terminals, 2505 McCabe Way, Irvine, Calif. 92714.

■ C. Itoh Electronics, Inc. has introduced a series of 14- to 19-in. monochrome and color monitors.

The QMD-1535 is a 15-in. screen monochrome monitor with a dot/line resolution of 750 by 700 pixels and a 0.31 dot pitch. It includes a 256 by 192 display size and is priced at $550.

The QMD-1735 is a 17-in. monochrome monitor with the same resolution and pitch as the 15-in. monitor. It has a diplay size of 300 by 225 pixels, the vendor said. Both monochrome monitors have a 50-MHz video bandwidth and weigh 22 lb. Monitors are available in green, amber and white phosphors.

C. Itoh's QCD-1455 is a 14-in. screen with a dot/line resolution of 720 by 700 pixels, 0.31 dot pitch and a 240- by 180-pixel display. It can display up to 27 colors and includes a 50-MHz frequency raster scanning

Continued on page 84

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Continued from page 83

system. The QCD-1455 is priced at $840.

The QCD-2011 is a 19-in. color monitor with 1,280- by 1,024-dot resolution and a 120-MHz video bandwidth. It has a display size of 338 by 270 pixels and a 0.31 dot pitch. The QCD-2011 is priced at $3,000.

C. Itoh Electronics, 5301 Beethoven St., Los Angeles, Calif. 90066.

PRINTERS/ PLOTTERS

■ **Televideo Systems, Inc. has introduced two daisywheel printers for use with personal computers.**

The TP 760 printer is an enhanced version of Televideo's TP 750 unit. It prints bidirectionally, and it is compatible with the Diablo Systems, Inc. 630 API command set.

The TP 780 letter-quality daisywheel printer features bold and shadow print and is compatible with the Diablo 630 API command set.

The TP 760 costs $419. The TP 780 costs $1,195.

Televideo Systems, P.O. Box 6602, 550 E. Brokaw Road, San Jose, Calif. 95150.

■ **Philips Peripherals, Inc. has introduced its Elpho 20 nonimpact page matrix printer.**

The Elpho 20 is said to produce letter-quality resolution for text and graphics by using electrophotographic recording technology, the vendor said. The machine, which was designed for use in a clustered workstation environment, is said to print 20 page/min with a noise level of less than 50db.

The system has both parallel and serial RS-232 interfaces. The RS-232 interface transfers data at up to 19.2K bit/sec. in full duplex mode.

The system costs $24,900 for the printer with a paper-feed module, a sorter, a paper cassette and toner. The printer alone costs $19,800.

Philips Peripherals, Unit 12, 385 Oyster Point Blvd. S., San Francisco, Calif. 94080.

■ **Dataproducts Corp. has announced three laser printers for its LZR-2600 product line: the LZR-2660, LZR-2665 and LZR-2630 daisywheel emulator model, compatible with the Diablo Systems, Inc. 630 printers.**

The LZR-2660 and LZR-2665 use the Postscript page composition language developed by Adobe Systems, Inc. Postscript is a page description language with bit-mapped image graphics capabilities, containing 13 resident type fonts that can be scaled to any size and placed in any orientation on the page.

The LZR-2630 can be used to replace several daisywheel printers. It can mix up to 64 resident, on-line type fonts on the same page.

All three models feature two input paper cassettes and a manual feed tray.

The LCR-2630 is priced at $14,900, the LZR-2660 is priced at $20,900, and the LZR-2665 is priced at $22,900.

Dataproducts, 6200 Canoga Ave., Woodland Hills, Calif. 91365.

OFFICE SYSTEMS

■ **NBI, Inc. has announced three products that reportedly expand its office automation systems capabilities in document management, micro networking and office communications.**

The Oasys 64/ES cluster integrated control unit is a shared resource system for clustering word processing and personal computing workstations.

It provides 1M byte of memory and is available with 38M, 76M or 166M bytes of disk storage.

Oasys 64/ES is priced from $14,900 to $31,400.

The Team-Up data base management system reportedly allows users to access, update and manage specialized departmental data base applications. Team-Up may be used with any Oasys 2000 workstation attached to the Oasys 64 or 64/ES.

It costs $795 to $2,795.

Multinet Office-Link is an adapter that reportedly allows nodes in an NBI local-area network to be connected with standard telephone wiring instead of special cabling. It allows workstations to be connected to Oasys 64 and Oasys 64/ES interface control units.

Each Multinet Office-Link allows attachment of eight workstations and is priced at $395.

NBI, P.O. Box 9001, Boulder, Colo. 80301.

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Your Connection to Industry Networks

There are also cases where an industry benefits from the efficient exchange of information.

In the property and casualty insur-

CAD from page 77

lists and graphics picture segments. Base price of the 2020-4228 is $17,995.

Ramtek also announced the 2020-4225 Tektronix-compatible desktop workstation for two-dimensional design applications. The product uses Ramtek's advanced architecture and very large-scale integration circuits and can perform segment creation and editing functions as well as pan and zoom functions, the vendor said.

The 2020-4225 can emulate Digital Equipment Corp.'s VT100 alphanumeric capabilities. The product drives a high-resolution, color raster display monitor and permits a four-color display. A standard RS-232C serial host interface permits asynchronous communications up to 19.2K bit/sec. Base price of the Ramtek 2020-4225 is $10,995.

The company also announced a display controller that reportedly can integrate computer graphics into custom configurations for two-dimensional drafting applications. Ramtek's 2020-4220 can support high-resolution graphics on the IBM Personal Computer and Personal Computer AT, the vendor said. The 2020-4220 is priced at $6,995.

For additional information, Ramtek is located at 2211 Lawson Lane, Santa Clara, Calif. 95050.

TURBO from page 77

byte memory board, is priced at $6,000. The floating-point processor board costs $7,500. The product is scheduled for fourth-quarter availability.

The company also announced the Iris 2300 Unix-based terminal for its 2000 family of graphics workstations. The product is based on the company's Unix implementation and a Motorola, Inc. 68010 microprocessor.

The Iris 2300 was designed to run a terminal emulator program under the company's Unix version, allowing programs developed on the company's standalone engineering workstations to run on the Iris 2300 without modification.

The Iris 2300 terminal includes two disk drives, a 20M-byte Winchester disk system and a floppy disk drive for loading software. The product uses the company's Geometry Engine and Geometry Accelerator, two proprietary VLSI circuits that allow the Iris 2300 to perform real-time 3-D graphics computations.

The Iris 2300 is priced at $30,500 and is scheduled for availability this month.

Silicon Graphics is located at 630 Clyde Court, Mountain View, Calif. 94043.

MINIS from page 77

$15,995. A second 68M-byte fixed-disk subsystem and controller costs $5,000. An upgrade kit, which allows DPS 6/22 users to replace an existing 28M-byte fixed-disk subsystem and controller with the newly announced 68M-byte counterpart, costs $7,000. A 64M-byte cartridge tape unit and controller costs $2,700 and memory upgrades to the 1.5M-byte maximum are made in 256K- and 512K-byte increments, which cost $1,750 and $3,500 respectively.

A dual-line communications controller costs $1,250, a second workstation/printer controller and five RS-422 ports costs $1,500, and an HDLC/SDLC controller costs $2,200. A two-slot expansion chassis costs $1,000. The products will be available in September.

The vendor is located at 200 Smith St., Waltham, Mass. 02154.

UNITS from page 77

tion package. The enhancement allows Tandem users to access, from a single terminal, 3270 applications from up to six IBM host processors via IBM's Systems Network Architecture (SNA) or binary synchronous protocols. Users of Tandem 6530 series terminals, Dynamite 6540 series workstations or IBM Personal Computers can run IBM 3270 and Tandem applications at the same time. These users can also alternate between IBM SNA and binary synchronous host processors through the use of menus. The enhanced emulator has a license fee of $500 for new licenses; however it is a no-charge upgrade for current users of Tandem's 3270 emulation package.

All four products are available immediately.

Tandem is located at 19333 Vallco Pkwy., Cupertino, Calif. 95014.

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COMPUTER INDUSTRY

SIA doubts Japanese promises

By Gilbert Wilder
CW Staff

SAN JOSE, Calif. — The trade association representing beleaguered U.S. semiconductor vendors has reacted skeptically to plans by the Japanese government and Hitachi Ltd.'s to increase the U.S. share of Japanese markets.

"Hitachi got the train on the right track but didn't move it very far," said Daryl Hatano, manager of governmental affairs for the Semiconductor Industry Association (SIA) based here. With U.S. chip makers' share of the domestic market dwindling, the SIA filed a petition recently with the U.S. Trade Representative seeking more Japanese purchases of American-made chips.

Hitachi announced last month at a Washington, D.C., teleconference that it will increase its purchases of U.S. products by $120 million by the end of 1986. But the SIA claimed that the planned increase represents just 0.5% of Hitachi's projected sales this year and will not significantly alter the current semiconductor trade imbalance.

"If semiconductors represent one-fourth of the U.S. products Hitachi buys this year, we calculate that to be about a $10 million increase in 1985," Hatano said. "Even if the other leading Japanese vendors follow suit for a $50 million increase in U.S. sales, we would still be short of [U.S. sales to Japan in] 1984. That is not the substantial increase in market share that we seek in our petition."

For long-term market share goals to be realized, U.S. chip makers must be treated as primary rather than residual suppliers to Japanese electronics vendors, Hatano said. Without a long-term commitment, U.S. firms will continue to be vulnerable to the boom-and-bust cycles of the volatile semiconductor market, he added.

See JAPAN page 100

Dataserv — third-party IBM hardware store

By Peter Bartolik
CW Staff

HOPKINS, Minn. — A used IBM 4331 Model 1 can be picked up for 11% to 15% of the IBM list price these days. But that same computer is worth more than double the list price to a company based here.

Dataserv, Inc. adds value to the 4331 not by bundling in software and peripherals, but by dismantling the CPU and selling components to third-party maintenance organizations.

Primarily involved in leasing, trading and maintaining IBM equipment, the company initially built its parts operation to service its own third-party maintenance efforts but quickly discovered a profit center opportunity. "We started the business to service ourselves," recalled company President Ronald G. Olson. "Then people started calling us and it turned into a real business."

Started in late 1983, the parts sales grew steadily to generate revenue of $2.3 million in 1984 and is expected to generate more than $7 million this year. The company boasts an inventory valued at $20 million in sales but readily admits it costs much less to accumulate the stocks.

"We're the hardware store for the third-party maintenance industry," said Craig Gillaspey, the head of the parts department who maintains an on-line data base of parts in stock and component alternatives that can be switched among different IBM machines. He said the company has even sold off "five-pound boxes of assorted IBM screws, nuts and bolts" for field maintenance engineers, adding that he would be embarrassed to say how profitable that sideline was.

Like many companies involved in the so-called third-party industry dealing in

See RESALE page 101

Computer industry update

INDUSTRY INSIGHT
Peter Bartolik
CW Senior Editor

Unless it can be proven that Japanese semiconductor manufacturers really are engaged in dumping practices, U.S. government involvement in chip trading makes little sense.

If there is one thing we do not need in the computer industry, it is the kind of protection that U.S. car makers received in the past few years. Several studies have pointed out that the result of quotas on Japanese car imports resulted in higher costs all around and little impact on imports.

One striking element of protectionism is that it rewards the lack of ability to compete.

To their credit, most U.S. chip makers have not sought tariffs on imports, rather, they have urged the U.S. government to pressure the Japanese to buy more U.S.-made products.

But the basic creed of the entrepreneurial spirit that supposedly dominates Silicon Valley is that you buy the best product from the most reliable source at the lowest price. If the Japanese truly are able to produce at lower cost, no amount of pressure is going to make U.S. chips a better buy.

As much as cost, the intertwining na-

See GNP page 100

■ There may be a slump in some segments of the computer industry, but Compaq officials recently declared that the business market for personal computers is still wide open/91

■ Anticipating a decline in revenue, Apollo Computer recently announced its work force will take unpaid leaves during the current quarter/96

■ Computervision recorded its second consecutive quarterly loss but attributed part of it to the costs of cutbacks implemented in the previous quarter/100

Acquisition, merger activity on rise

Software, services survey shows 49% increase in 1985

FORT LEE, N.J. — In the software and services industry, today's buzzword is mergers.

A study from Broadview Associates, compiled twice a year here for members of the Association of Data Processing Service Organizations, Inc. (Adapso), reported the software and services industry experienced a 49% increase in merger and acquisition activity during the first half of 1985. The study also revealed a 42% increase over last year in the number of firms considering mergers. The figures do not include General Motors Corp.'s $2.5 billion acquisition of Electronic Data Systems Corp. (EDS) last year.

There were 82 merger deals consummated during the first half of the year, compared with 56 during the first half of 1984, according to the "Broadview Index," which attributed the rise to the unavailability of funding from venture capitalists and the public market. Of those 82 acquisitions, 63% occurred in software products firms, the study said.

Merger considerations totaled $846.4 million during the first half of 1985, compared with $597.6 million through June of last year, the index said. Among the more notable acquisitions during the first six months of the year is Sterling Software, Inc.'s offer to acquire Informatics General Corp. of Woodland Hills, Calif.

Not only are there more mergers, but this year's mergers are more expensive, the index noted. "Excluding last year's General Motors-EDS deal, the 10 top deals in the first half of 1985 had a greater value than all deals in the first half of last year," said George Grodahl, a partner with Broadview Associates. According to the "Broadview Index," firms looking for acquisitions are seeking older, more mature companies and not burgeoning start-ups.

About 62% of the merger deals consummated during the first half of the year were made by companies seeking an expanded role within the software industry, while 28% came from major corporations seeking to expand their position within the software and services industry.

Broadview Associates is located at 2115 Linwood Ave., Fort Lee, N.J., 07024.

Bankruptcy court approves Ztel plan

WILMINGTON, Mass. — Ztel, Inc. recently announced it had received approval of its reorganization plan from the U.S. Bankruptcy Court and emerged from U.S. Federal Bankruptcy Act Chapter 11 proceedings only 79 days after filing for protection.

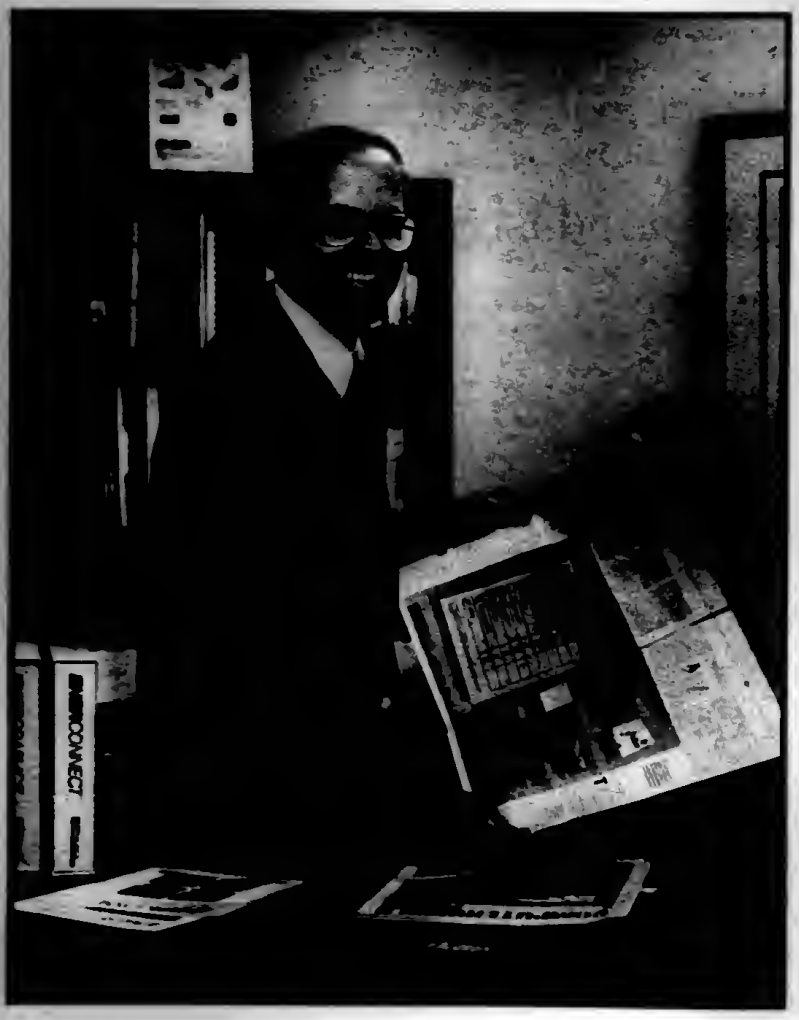
The company said the plan calls for 100% repayment of creditors.

Ztel will receive $17 million in capital in exchange for new Class A preferred stock issued to investors General Electric Venture Capital Fund, NCR Corp., Hillman Co. and subsidiaries and Harvest Ventures.

Murray H. Bolt, president and chief executive officer, said that the firm is now in a position "to pursue [actively] new distributor agreements and additional end-user installations and to step up our manufacturing and marketing operations to meet those demands."

The company, based here, is a manufacturer of an integrated voice/data private branch exchange system.

"Two ads in Computerworld Focus flooded us with inquiries on our new micro product, EnerConnect."



EnerConnect is the second major micro product from Enertronics, developers of the successful EnerGraphics package. As the ad for EnerConnect says, it is "... the first software package that puts mainframe graphics capability into the hands of anyone with an IBM PC ... or 3270 PC."

When it came time to announce EnerConnect, Randy Andes decided to use *Information Week*, *Business Week*, and *Computerworld Focus*. As Randy puts it, "... we knew *Computerworld* reached the people we need to talk to from past ads for EnerGraphics, and we decided to test *Focus* because, as the name says, each issue focuses on a topic. So, we could select an appropriate editorial environment."

The results? "*Computerworld Focus* has produced the most response of any of the publications used and, by far, the best response. In fact, total response (via the 800 number) has far exceeded expectations. We further intend to continue to tie into *Computerworld's* editorial calendar where appropriate."

The moral? Well focused advertising in a well focused medium will produce the best results every time.

Call your *Computerworld* advertising representative for more details on upcoming issues of *Computerworld Focus*.

Randy T. Andes, Director of Marketing, Enertronics Research, Inc., St. Louis, Missouri.

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Compaq bucks trend, posts second-quarter gains

Cites unsaturated business market

By Eric Bender
CW Staff

NEW YORK — Claiming that the business micro market keeps growing despite the overall industry slump, Compaq Computer Corp. recently posted second-quarter sales of $118.9 million, showing a 22.5% increase over first-quarter results and an 80% boost over second-quarter 1984 revenue.

Net income for the quarter just ended reached $5.7 million, a 536% gain over $892,000 in the corresponding quarter last year.

"We're in the strongest position we've ever been in," President Rod Canion told securities analysts here.

> *'We still have 70% to 80% of the market ahead of us.'*
> — Michael Swavely
> Compaq Computer Corp.

Despite industry reports of slowing sales, "the business personal computer market is clearly not saturated at this point," Marketing Vice-President Michael Swavely said. Estimating that between 10 million and 12 million micros have been placed among the more than 53 million U.S. white-collar workers, Swavely maintained that "we still have 70% to 80% of the market ahead of us."

Canion said he expects Compaq to maintain current pricing on its systems, noting that the Houston firm traditionally has pegged its prices to IBM's and predicting that IBM will not announce major price reductions this year. "They learned a good lesson last year," he said. "They cut prices 20%, and unit sales didn't go up. That kind of performance doesn't go unnoticed in Armonk [N.Y.]."

Demand among large corporations continues to be strong, Swavely said, citing a recent survey of the Westchester County Corporate Micro Users Group, which found member companies planning to purchase 30% more microcomputers during the next 12 months than the total number in their installed bases.

"We're still seeing a number of companies that have only just made a commitment to personal computers," Swavely said. The share of Compaq products going into Fortune 1,000 firms has increased in the past year, he added.

The Houston manufacturer also has found that "the majority of today's personal computer buyers are repeat buyers," Swavely said. Studies showed that 87% of the company's customers were repeat buyers in April, up from 37% last September.

"This plays to Compaq's strength," as experienced users look for added functionality, Swavely said. These users pass their micros along to first-time users, and "the importance of [IBM] compatibility is magnified by the trickle-down effect," he said.

More than 10,000 of Compaq's new Intel Corp. 80286-based systems shipped in the two months following their April introduction, Canion said, adding that he expects production to catch up with demand in the third quarter.

Compaq has shipped more than 300,000 personal computers, which represents almost one-tenth of IBM's estimated deliveries, Canion said. He presented estimates of overall U.S. retail sales of business micros that showed IBM with a 63% share, Compaq with 16%, Apple Computer, Inc. with 12% and AT&T with 4%. Other contenders "have just about gone away," he said.

He also noted that the firm's Compaq Telecommunications Corp. subsidiary began volume shipments of its Telecompaq voice/data workstation to OEM customers in July and said that the firm is "very close to additional major deals."

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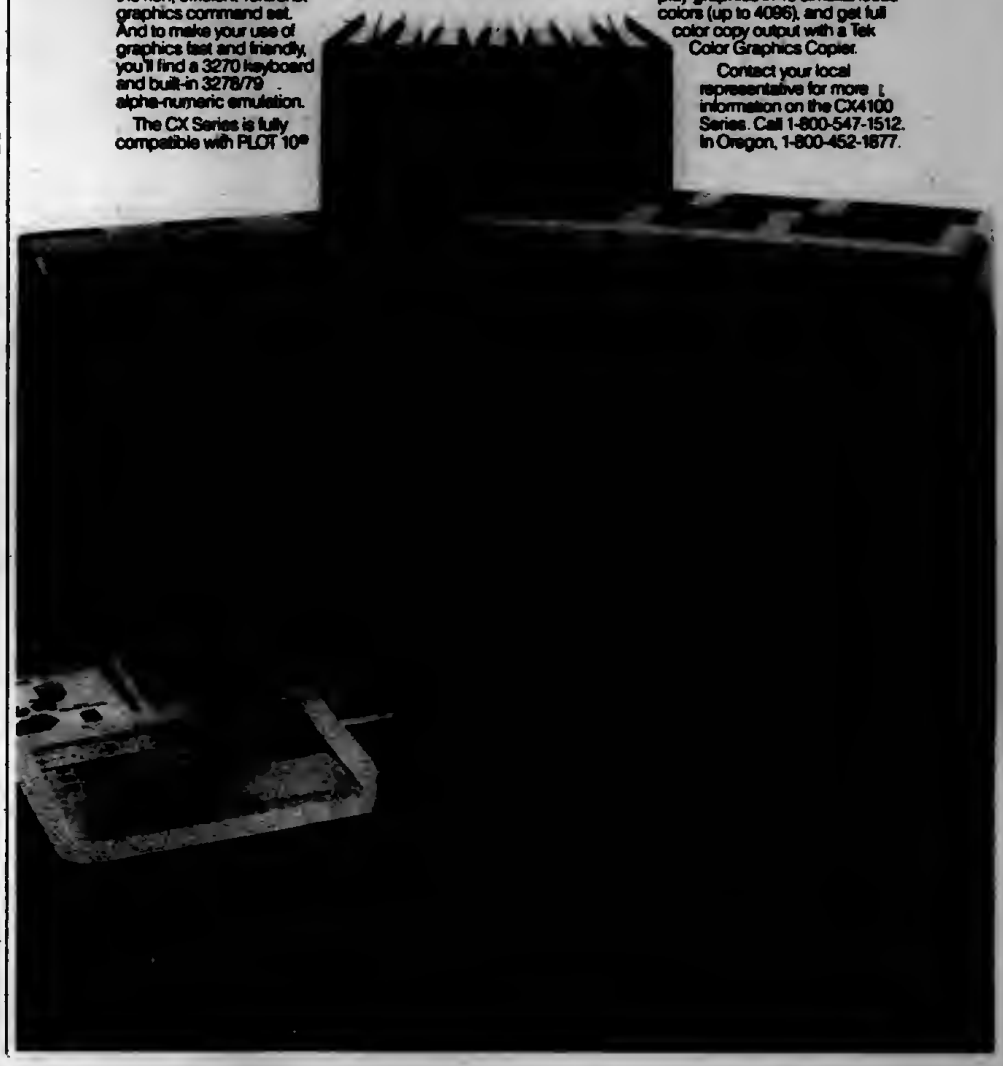

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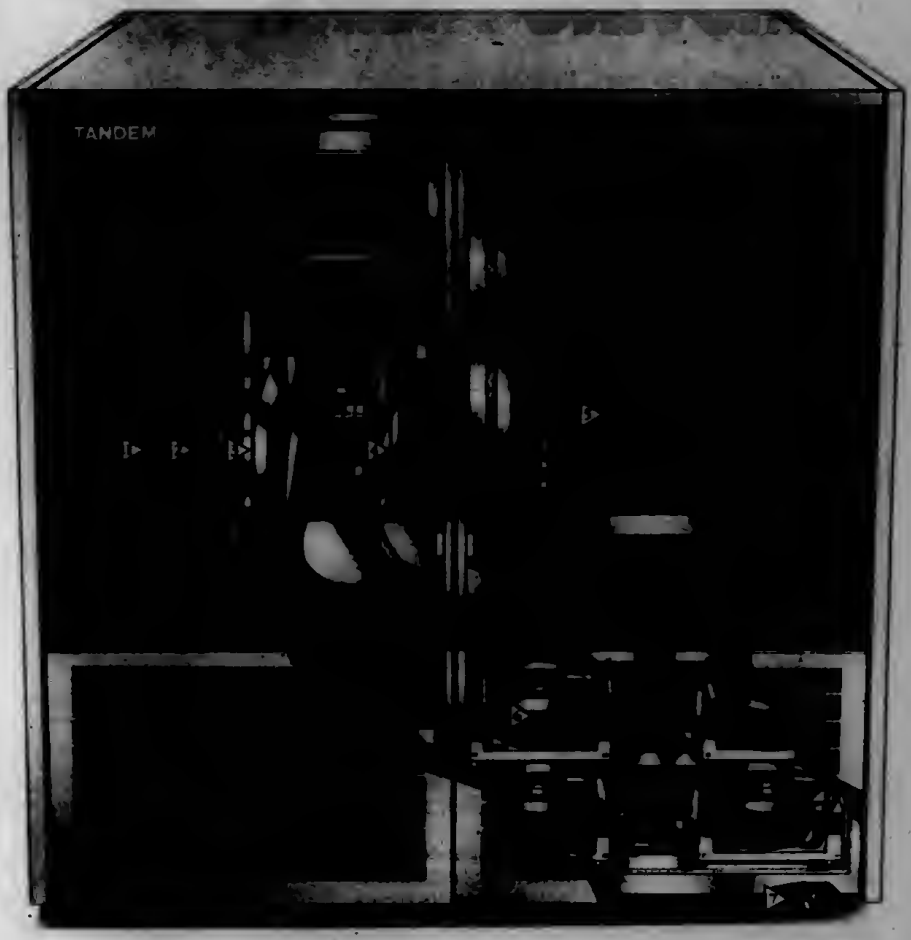

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Vendor restrictions should not stifle user's creativity

OUTSIDE LINES
L. J. Kutten

Do developers of computer programs have any claim to works created with the help of their programs?

Until recently I assumed without thinking the answer to such a question was no. But then I received the Videoworks software program from Hayden Software Co.

Videoworks is an animation package for the Apple Computer, Inc. Macintosh. It allows the user to produce professional-quality animation that can be used to create cartoons, business presentations and the like. It is an excellent program that does what it is advertised to do. However, product literature says the program cannot be used in a commercial setting. Right below the copyright notice is the following statement:

"Warning: This reservation covers art shown by this software as well as the software itself. Purchasers of copies of this software may view and reproduce such art for noncommercial enjoyment purposes only."

A Hayden representative initially maintained that this statement meant exactly what it said: any commercial use, including in-house commercial use, was prohibited. If commercial use was intended, an additional license would have to be obtained from Hayden.

After I had several discussions with both Hayden and the author of the program, Hayden reversed itself and announced that commercial use was not prohibited.

But the incident started me thinking about the nature of a work "coauthored" by a computer program.

Why couldn't this reservation be legal? From Hayden's viewpoint, one could argue that actually displaying a finished product with Videoworks is only possible because of the creative contribution of Videoworks' creators. Without it, no one could create this type of animation. The problem with accepting this argument is that it can equally apply to data base, word processing, spreadsheet and other programs.

After some serious reflection, I realized why Hayden's analysis was wrong. Copyrighted software has one fundamental difference from all other types of copyrighted material; it is nothing more than a tool to accomplish an end.

No tool manufacturer would claim that the tool created the work. A tool is just an instrument to create something.

A typewriter or Micropro International Corp.'s Wordstar does not write a book, a person does; a paint manufacturer does not create a painting, a person does. Likewise, Videoworks does not create the animation, a user does. In this sense Videoworks is no different than any other tool used by people to express their creativity.

Society benefits from encouraging creativity; new products are constantly being developed. Limiting the ways people can use a particular tool limits their creativity. And even Hayden itself must acknowledge that without creativity Videoworks itself would never have been created.

Kutten is a writer specializing in computer law topics. He is a member of the bar in Illinois and Missouri and the author of Computer Buyer's Protection Guide, *published last year by Prentice-Hall, Inc.*

Profits rise at Comdisco

ROSEMONT, Ill. — Comdisco, Inc., the largest publicly held computer dealer and lessor, recently announced third-quarter profits of $18 million, or 67 cents per share, including approximately $7.7 million in revised estimated tax benefits.

The profit compared with year-earlier profit of $6.99 million, or 25 cents per share.

The company said that during the quarter just ended, it filed for a refund of $14.6 million in federal income taxes paid in prior years due to a carryback of investment tax credits. The refund will be received during the fourth quarter and added to investment tax credits recognized in estimating the tax rate for the current year. This resulted in reducing the previously reported six-month tax rate of 19% to 1% for the entire year.

Pretax profits in the quarter amounted to $12.8 million, compared with $8.8 million a year earlier.

Revenue for the quarter was $149.3 million, up from $133.1 million a year earlier.

Kenneth N. Pontikes, chairman and president of Comdisco, said that IBM's recently announced products and expedited delivery schedules for the 3090 mainframe "will stimulate market activity for both new and used equipment, further enhancing our earnings opportunities." He said the company's diversified subsidiaries continued to contribute steadily to overall results.

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Zaisan files Chapter 11 plea

HOUSTON — Zaisan, Inc. a manufacturer of integrated voice/data workstations, recently announced it has filed for reorganization protection under Chapter 11 of the U.S. Federal Bankruptcy Act.

The company said it will continue operations and named Donald F. Bynum as president and chief executive officer. Bynum previously guided Dallas-based Micro Craft Corp. through Chapter 11 proceedings. Mark Fowler, former Zaisan president, resigned in the spring.

In its Chapter 11 petition, the firm cited high start-up costs and costs attributed to an earlier attempt to sell its products through retail distribution channels. The company manufactures the ES.1 voice/data terminal and ES.3 IBM Personal Computer-compatible workstation.

The company had been reevaluating its situation since January, when it brought in a team of consultants to examine operations, according to spokeswoman Wendy Roloff. In April, the company reduced employment to fewer than 35 people, down from a high of 180 last summer.

Digital Research inks buy-in pact

MONTEREY, Calif. — Digital Research, Inc. recently announced that both Northern Telecom, Inc. and Motorola, Inc. signed agreements to purchase minority equity interests in the microcomputer software firm.

Gary Kidall, founder and chairman of the board at Digital Research, said "This vote of confidence from these two companies provides strong capital support to continue the development and launch of our very well-received [Graphics Environment Manager] product line and the family of Concurrent DOS operating systems."

Digital Research said the investments are not a step toward acquisition and that both firms are limited to holding minority shares in the company.

The agreement reportedly provides Northern Telecom with 15% of Digital Research shares and Motorola with 7.5%, for an estimated total cash infusion of $9 million.

Privately held Digital Research has reportedly been under financial pressure in recent months as it sought to formalize product strategies to duplicate its earlier success with CP/M.

Apollo institutes cost-cutting acts

CHELMSFORD, Mass. — Anticipating a third-quarter decrease in revenue, Apollo Computer, Inc. recently announced it has implemented cost-reduction measures, including a mandatory six-day leave for most employees.

The company said that employees will not be paid for the leaves, which are to be taken during this quarter. Salesmen will not be affected by the mandatory leave but will receive a 7.5% reduction in base pay, the company said.

Additionally, the company's component manufacturing operations will be moved to a new facility in New Hampshire, and all affected employees will be offered positions there in New Hampshire, the company said.

"We currently face the probability of a sequential quarterly decrease in revenue in the third quarter, due to a depressed order rate, seasonal factors in international markets and product transitions," said Thomas A. Vanderslice, Apollo's president and chief executive officer. However, he added that the company is well positioned to benefit from a recovery in sales.

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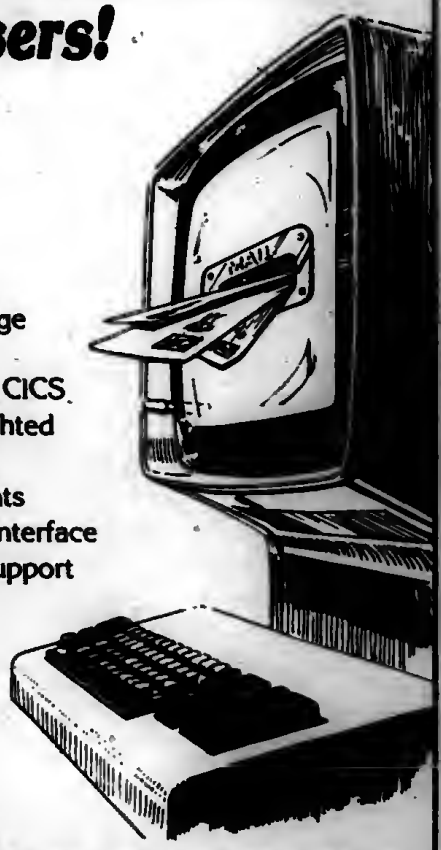

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Revenue rises at Informatics

WOODLAND HILLS, Calif. — Informatics General Corp., manufacturer of the Answer/DB data base management system, reported a 25% increase in revenue for the second quarter ended June 30 compared with the same quarter a year ago.

Informatics said second-quarter revenue was $55.4 million compared with $44.5 million the previous year.

Although it realized a jump in sales, Informatics reported a net decline of $579,000 in profits compared with a gain of $611,000 during the second quarter of 1984. The company attributed the loss to $2 million in expenses incurred during its proxy contest earlier this year with Sterling Software, Inc. of Dallas.

Paradyne takes quarterly loss

LARGO, Fla. — Paradyne Corp. reported a loss of $9.2 million, or 41 cents per share, for the second quarter ended June 30, compared with a profit of $2.4 million, or 11 cents per share, during the like 1984 quarter.

Revenue at the data communications equipment company was $66 million for the second quarter compared with $70.5 million during the second quarter of 1984.

For the six months ended June 30, Paradyne reported a net loss of $9.04 million compared with a net profit of $5.3 million for the same six-month period a year ago.

The loss included a $10 million pretax provision for slow-moving and obsolete inventory and off-lease equipment, a spokesman said. Paradyne President Robert Wiggins attributed the profit loss to an industrywide sales slowdown, losses in its UK subsidiary and an $800,000 pretax expense related to the company's new circuit board facility.

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COMPUTERWORLD

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6A87-61

Lotus adds three divisions in company reorganization

CAMBRIDGE, Mass. — Lotus Development Corp. recently created three additional divisions to reorganize the company around a total of five divisions.

Previously, Lotus had operated the Engineering and Scientific Products Division and the Publishing Division.

The Business Products Division was created to market the company's existing software products and develop and market new products targeted at general business managers. Charles Digate, former vice-president of marketing, was named vice-president and general manager of the division.

Irfan Salim, former director of international operations, was named vice-president of the International Division to direct worldwide operations.

The Information Services Division was formed to manage and expand products produced by Dataspeed, Inc., of San Mateo, Calif. Shareholders of Dataspeed, which manufactures two products that receive real-time stock quotations, recently approved the $6.5 million sale of the company to Lotus.

Multinational forum eyes office systems technologies

Managers to exchange corporate information

By Peter Bartolik
CW Staff

BOSTON — Managing the implementation of advanced technologies in the office may soon take on a multinational flavor with top executives on both sides of the Atlantic exchanging information on the changing corporate environment.

The Office Technology Research Group, based in Los Angeles, recently announced it had established European offices in London and Brussels. Office Technology Research Europe will emulate the 8-year-old U.S. group's history of bringing together senior executives from major corporations to address management issues arising from the introduction of advanced technologies in the office.

John J. Connell, executive director of the U.S. group, said in a recent interview here that the European venture will provide a forum for European executives to learn from each other, provide them with implementation strategies adopted in the U.S. and give U.S. and Canadian executives some insight into what is going on in Europe.

"There will be information flowing both ways," Connell said. North American executives may gain valuable insight in "those areas where the Europeans have perhaps more progressive ideas than we have — ergonomics for example." He noted that "a concern for the impact of technology on people is much stronger in Europe than it is here."

Connell started the group in 1977, and it has met semiannually "as a forum where managers from large companies can share with each other what they are doing in the world of advanced office systems and what they are learning from it." The group also distributes newsletters and updates of its 10-volume "Office of the Future" library to members.

Connell's group focuses on the impact technologies have on management processes, organizational relationships and other factors involved in determining how a business should be run. One area of continuing concern "is how do you measure the gain that you may receive from these systems," he said. "How do you estimate it, and then after you put the system in, how do you measure it? If you want to call it productivity, how do you measure productivity?"

North American subscribers to the group number approximately 44 from among the Fortune 200, including Hughes Aircraft Co., Security Pacific National Bank, Atlantic Richfield Co., Northern Telecom, Inc. and General Dynamics Corp.

"The member companies are of a size where they are willing to experiment a bit with very advanced technology," he said. In addition to swapping case histories, the members have formed a networking resource, and Connell said he hopes to extend that network across the Atlantic.

Prior to forming the group, Connell was deeply involved in technological implementation as vice-president of administrative services with Atlantic Richfield where he functioned as the top MIS person. "But I was also responsible for telecommunications and all the office administration," he said.

"When the drive to move machines into the office really took off, in the mid-70s, I was responsible for that at [Atlantic Richfield], and it became apparent to me there were a . . . lot more answers than questions." That led him to create a forum for executives to discuss how to manage the vast technology resources being tossed on the market.

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New Issue / July 29, 1985

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COMPUTER INDUSTRY

NICKELS AND DIMES

Tektronix, Inc. reported revenue of $86.3 million and a net loss of $19.4 million, or 93 cents per share, for the fiscal quarter ended June 29.

This compared with revenue of $121.5 million and profits of $8.8 million, or 42 cents per share, for the same period a year ago.

■

Lee Data Corp. announced revenue for its first quarter ended June 30 of $21.8 million, compared with $23.9 million in the same quarter last year. Profits were $866,000, or 6 cents per share, compared with $2 million, or 15 cents per share, in the same period one year earlier.

■

Software AG recently announced revenue for its fiscal year ended May 31 of $52.3 million, compared with $39.6 million in the prior year. Profits were $6.7 million, or $1.12 per share, compared with $5.1 million, or 83 cents per share, in the comparable period last year.

For the fourth quarter, revenue was $14.1 million, or 17 cents per share, compared with $10.5 million, or 17 cents per share, for the same period of the prior year.

■

Computer Task Group, Inc. reported revenue for the second quarter ended June 30 of $28.2 million, an increase of 51% over $18.6 million reported in the same quarter one year ago. Profits were $993,000, or 26 cents per share, compared with $511,000, or 17 cents per share, in the comparable period one year earlier.

The company's revenue and earnings per share for the 12 months ended June 30 were $101 million and 90 cents, respectively.

■

Compagraphic Corp. reported revenue of $105.1 million for the quarter ended June 29, compared with $94.8 million for the second quarter last year. Profits were $8.3 million, or $1.01 per share, compared with $6 million, or 72 cents per share, in the same quarter last year.

During the quarter, Compagraphic sold its French and West German subsidiaries, resulting in a gain on the sale and the recognition of income related to previously eliminated intercompany profit in inventory. The effect of these transactions was net income of $1.9 million, or 23 cents per share, which is included in the reported figures.

■

Teradyne, Inc. reported revenue for the quarter ended June 29 of $85.9 million, compared with $93.6 million in the year-earlier quarter. Profits were $3.8 million, or 16 cents per share, compared with $10.6 million, or 46 cents per share, in the comparable quarter one year earlier.

■

Quantum Corp. announced revenue for the first quarter of fiscal 1986, ended June 30, of $34 million, compared with $25.3 million in last year's quarter. Profits were $5.7 million, or 60 cents per share, compared with $4.2 million, or 45 cents per share, in the same period last year.

■

VM Software, Inc. reported revenue for the second quarter of $4.2 million, compared with $2.7 million in the same quarter last year. Profits were $590,543, or 16 cents per share, compared with $527,113, or 15 cents per share, for the second quarter last year.

■

Lexidata Corp. reported revenue of $6.3 million, with a net loss of $1.2 million, or 17 cents per share, for the 13-week period ended June 29.

These results compare with revenue of $9.4 million, and a net loss of $300,000, or 5 cents per share, for the comparable period in the last fiscal year.

SUPERSHORTS

Atex, Inc., a subsidiary of Eastman Kodak Co., recently announced it has reduced its U.S.-based work force by 260 people. The company said it eliminated redundant positions and consolidated administrative operations.

Atex said there is continued strong demand for its computer-based publishing systems.

■

Fujitsu America, Inc., a telecommunications, computer and office automation products firm, officially broke ground in Hillsboro, Ore., for a $30 million, 144,000-sq-ft plant.

The Fujitsu facility, located 20 miles west of Portland, Ore., will open in the spring of 1986. It will reportedly manufacture computer disk drives and related disk products, eventually employing more than 400 workers.

■

U.S. Bankruptcy Court Judge Lawrence Dilason signed an order dismissing the Federal Bancruptcy Act Chapter 11 case of Digidyne Corp. of San Diego, based on the company's commitment to pay all undisputed trade claims in full.

■

The Data Systems Group of Texas Instruments, Inc. announced it has signed a three-year, multimillion-dollar contract to deliver systems, including hardware and software, to Sperry Corp.

■

A consolidation of ITT Industrial Credit Co. into the operations of ITT Commercial Finance Corp. has been announced by Melvin Brown, president and chief executive officer of ITT Commercial Finance.

Computervision posts second-quarter loss

BEDFORD, Mass. — Computervision Corp., which dismissed 960 workers in April, recently announced its second consecutive losing quarter.

The company said it posted a loss of $19.5 million, or 68 cents per share, for the quarter ended June 30. In the year-earlier quarter, when the company was growing at a 40% rate, profits were $11 million, or 38 cents per share.

The second-quarter loss was slightly more than the first-quarter loss of $18.7 million.

Revenue in the quarter just ended was $112.2 million, down from $133.6 million a year earlier.

James R. Barrett, Computervision's president and chief executive officer, said the second-quarter loss included $5.7 million related to streamlining expenses. Included in those costs, he said, were provisions for disposal of surplus facilities, severance costs and other adjustments.

Xerox reports profits, revenue up for quarter

STAMFORD, Conn. — Xerox Corp. recently announced that continuing operations of its Reprographics and Informations Systems business generated second-quarter revenue of $2.14 billion, up 3% from $2.07 billion a year earlier.

Profits from that group were $102 million, up 9% from $94 million a year earlier, the company said.

Overall, including Xerox's financial services operations, the company posted profits from continuing operations of $118 million, or $1.11 per share, up 35% from year-earlier profits of $88 million, or 79 cents per share.

Including discontinued operations, Xerox reported profits of $221 million, or $2.17 per share, compared with year-earlier profits of $96 million, or 87 cents per share. In the fourth quarter of the previous fiscal year, the company discontinued operations of its Shugart subsidiary and is currently selling off several publishing units.

JAPAN from page 89

"The Japanese didn't cause the current industry downturn, but they have intensified it," Hatano said. "When there's a drop in the market, being a residual supplier amplifies the down cycle, because purchases from the residuals are cut back more than those from the main [Japanese] suppliers. We want to be treated equally."

Echoing the generally cool response from the U.S. Congress and the Reagan administration, Hatano said the three-year, market-opening plan the Japanese government unveiled would have little effect on the U.S. semiconductor industry woes. Practices such as easing Japanese standardization requirements would have no impact on the key issue — the buying patterns of Japan's largest electronics firms, Hatano contended.

"The government plan doesn't hit at all what we're dealing with," he said.

Last week, the International Trade Commission (ITC) ruled favorably on a petition filed by Micron Technology, Inc. of Boise, Idaho, alleging dumping of 64K-byte memory chips. The ITC ruling, a preliminary finding that dumping is hurting domestic manufacturers, will result in a formal investigation by the U.S. Department of Commerce.

CHIP from page 89

ture of the Japanese business community is said to result in Japanese businessman buying from Japanese businessman. There is little anyone can do to halt such a practice. But there is also nothing to prevent U.S. businessmen taking the same approach and buying domestic products — except the creed for getting the best deal.

■

Ah, if only I had a big brother like the one Electronic Data Systems Corp. (EDS) has.

EDS was acquired last year by General Motors Corp. In a recent financial report, EDS said profits for the second quarter jumped 126% to $42.4 million. Revenue jumped 236% from $224.4 million a year ago to $755.2 million.

Although revenue from outside customers increased respectably, it was the $514.1 million that GM and subsidiaries payed into EDS that made the big difference.

■

The "Bring Back PCjr" campaign [CW, July 22] aimed at IBM has gone national, with chapters now in Framingham, Mass., and Provo, Utah. Can an Armonk, N.Y., chapter be far behind?

With the ground swell growing, it remains to be seen how long IBM can ignore users who want the processor pachyderm to live up to its marketing promises for future PCjr add-ons.

Although the opening of the western chapter marks a significant victory, the timing coincided with a stinging defeat. *Computerworld*'s media cousin, *PC World*, after running "The PCjr Survival Kit" in its July "PCjr World" insert, apparently has given up hope. With nary a word to the faithful, the West Coast magazine dropped the PCjr insert from its August edition. The ghost of microprocessors past shall surely start visiting Publisher David Bunnell.

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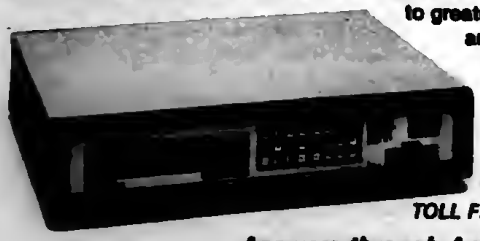

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RESALE from page 80

resale of new and used IBM equipment, Dataserv has found success by offering something that IBM is unable or unwilling to deliver. In the parts business, overnight delivery of used IBM components can be worth more than a six-month lag time for new components; the company also stocks new parts from IBM.

But Dataserv is not bashful about competing directly with IBM. Armed with studies designating it the sixth-largest third-party computer maintenance organization, the firm has implemented a depot maintenance and service agreement with State Farm Life Insurance Co. in contiguous sales territories dividing the nation from the Canadian border to Texas.

Jim Meyers, company founder and president of the Dataserv Computer Maintenance, Inc. division, said he hopes to win a national agreement with State Farm but readily admits that "IBM will fight us dearly for that."

Concerned about IBM

The company also is concerned that IBM may become more aggressive in the parts business if the U.S. Department of Justice recommends approval of IBM's request to eliminate a 1956 consent decree. That court-sanctioned decree not only required IBM to end its lease-only equipment practice but also required it to sell parts and subassemblies on a nondiscriminating basis.

"If the consent decree is irrelevant [as IBM has claimed], why not leave it in place?" Meyers said. "Since the decree was put in place, nothing has really changed."

The supply of IBM parts is crucial to the maintenance business. And, Olson noted, "The greatest profit opportunity over the next five years is in the maintenance business."

Dataserv has revolved around IBM's world since Meyers started the company in 1969. IBM-related operations contributed greatly to the firm's 1984 revenue of $109.9 million and profits of $2.1 million.

Its initial thrust, and still a vital component of total revenue, was in trading and later leasing IBM 1490 check sorter devices. Although 12 years old and since replaced by the 3890 document processor, the 1490 still retains one-third of its value, according to Meyers. "We provide more check sorters [both older and newer models] than anybody other than IBM," he said. The company claims as customers 15 of the top 20 U.S. banks.

According to Meyers and Olson, equipment sales and lease revenue is about evenly derived from check sorters, 80% of which are leased; CPUs, about half of which are leased and half traded; and point-of-sale (POS) equipment, which is mainly a trading business and the only segment not dominated by IBM equipment. Trading in used POS equipment and reselling replaced equipment has been a profitable business that has gained the company an entry to provide maintenance service to retail operations, the company said.

Dataserv does much of its business on a transcontinental basis. For several years, the company had conducted business with a similarly structured firm based in London, the Premier Computers Ltd. group, which operates in several European countries. In 1980, the firms merged, retaining the officers of both companies.

Before the merger, Olson said that Premier "would provide us with a lot of check sorters from big banks in London; we'd bring them over here and convert them [to U.S. power configurations]."

Buy-out talks led to merger

When the companies started running into competitive conflicts, buy-out discussions eventually led to a merger, he said. In 1984, U.S. operations generated revenue of $64.5 million, and European operations generated $45.5 million.

In late 1983, faced with the need to raise outside capital to fund expansion plans, the merged company issued a public offering in London. "We thought the cost of the offering [in London] was about 60% to 70% of making the offering in the U.S.," Olson said.

In addition to a more receptive market in the UK than in the U.S. at the time, the move adds a little prestige. "We have a listing on the London exchange, instead of being listed over the counter in the U.S.," he said.

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Data Processing

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Telephone: (966) 01-401-[illegible]
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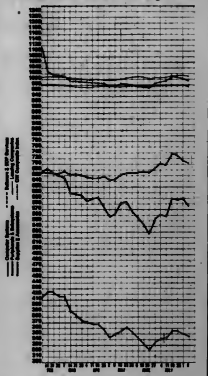

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